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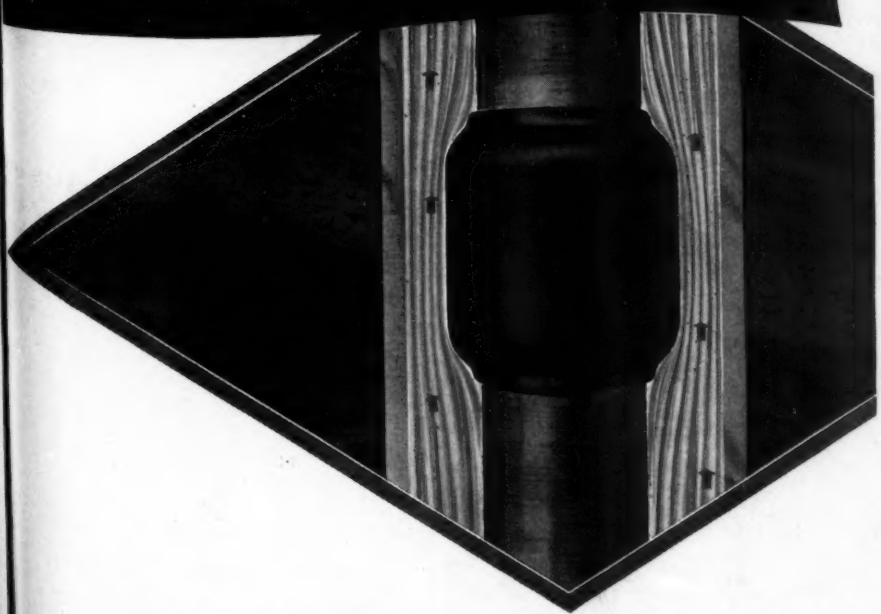
The OIL AND GAS JOURNAL

6 REASONS why more operators and contractors specify Patterson-Ballagh Casing Protectors



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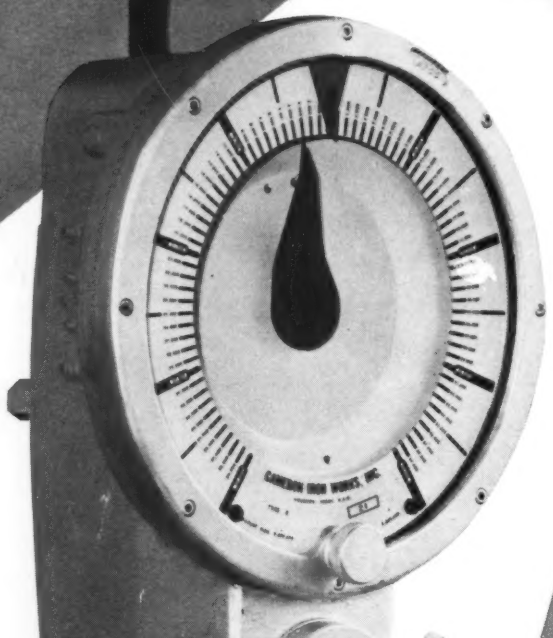

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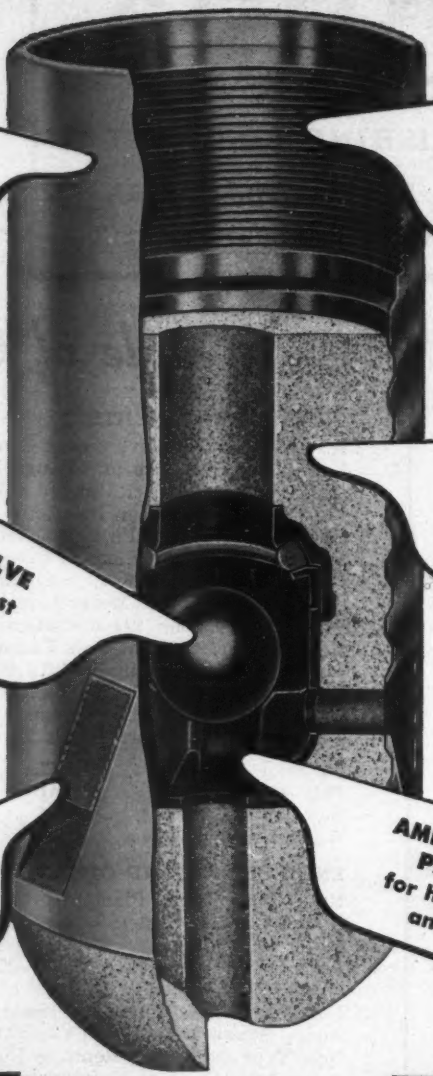

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How Deep Are You?

A PERFECT example of the usually friendly but always stiff competition within our industry can be seen in the activities of the eyes and ears of the oil companies—the scouts. The recent annual meeting of their organization, National Oil Scouts and Landmen's Association, in Denver, brought the leaders of this profession together once more; and the formal program would have been a credit to any professional group.

It is doubtful if there is any other industry in which current and timely information is so necessary to successful operations as it is in ours. The direct costs alone of scouting departments must run close to $20,000,000 per year for the whole industry. Yet the most efficient companies are usually also the most aggressive in their use of scouts.

Everyone takes it for granted that a good scout must be a combination of salesman and diplomat. But in addition he must have many of the qualities of a detective; piecing together a clue here, an apparently unrelated item there, and making a correct deduction as to what is really being planned in his territory and who is interested.

Above all else, he must successfully strike a balance with his fellow scouts, determining what information shall be pooled for all, what may be swapped in individual trades, and what items must be reserved for his home office alone.

A well-run district scout check organization is an object lesson in the combination of free competition and free cooperation. There are theorists about government who insist that there must be either 100 per cent competition or 100 per cent socialistic control (preferably the latter). These men could learn much by watching the scouts for a few months and observing how intelligent men solve these problems. They economize in time, effort, and cost to their companies by using cooperative effort in some activities, while remaining competitive and retaining full individual initiative in others.

The modern scout must know something about geophysics. He keeps track of the field parties in his area and tries to deduce why they are working along certain lines. He definitely must understand enough geology to know what information is significant and what is unimportant.

Of course the drillers and tool pushers must be his good friends. But drill-stem tests, gun-perforating jobs, cementing, acidizing, electric or radioactive log runs are all meat for his report in as accurate detail as possible. So the servicing organizations are his friends, as are equipment suppliers.

On any important wildcat it is always to several peoples' advantage to keep key information secret as long as possible. The best possible tribute to the scout's ability is that the industry accepts as a maxim the saying "there is no such thing as a really tight hole." Somewhere, somehow, some ingenious scout has ferreted out the facts and reported them to his company.

A. P. I. Warned of Government Control, Asked for Higher Natural-Gas Price

by Bertram F. Linz

WHITE SULPHUR SPRINGS, W. Va.—A warning that the danger of government control of the oil industry lies in Congress and not in the administration and a plea for a better price break for the independent natural-gas producer marked the spring meeting of the eastern district of the American Petroleum Institute's production division here June 30 to July 2.

Describing the work of the various government agencies concerned with oil, Max W. Ball, who will retire as director of the Oil and Gas Division next month, declared that while a few minor officials may be ambitious to extend their authority, no responsible high official really wants permanent controls although several cabinet officials have supported President Truman's request for authority to impose temporary emergency controls if they became necessary.

"The proposals for government controls we have had during the past year have not come from the administration but from members of Congress," he said. "And in the main, those bills have not originated with radicals, communists, socialists, New Dealers or even Democrats—many of them have come from the conservative Republican party.

"If you do not believe in government controls and are fearful of them, let me suggest that you do some studying now where to direct your fears."

Ball Defends Exports

Anticipating that lack of tubular goods would be a subject of concern in subsequent discussions, Ball defended the export of material badly needed by the domestic industry as the most effective way of quickly developing the large-volume production required to correct the present tight supply situation. He did not discuss the trans-Arabian pipe line for which pipe shipments now have been suspended, but did refer to the recent authorization for the export of pipe for an Anglo-Iranian line where, he said, 12,000 tons of steel would handle 100,000 bbl. of crude daily on the Persian Gulf, 70,000 bbl. of which will come to the United States, 30,000 bbl. of it going to independent refiners now unable to operate at capacity for lack of adequate crude supplies.

One of the questions most frequently asked of the OGD, Ball said, is whether crude production is deliberately being held back as is firmly believed by many marketers, but all the evidence his office can gather, he declared, indicates that through every state, except for a few spots where transportation is inadequate, production is at the maximum efficient rate of recovery.

The need for a higher field price for natural gas was developed by Frank E. Eckert, manager of Hanley & Bird, Bradford, Pa., who declared that unless the major gas companies adopt the enlightened attitude of the oil companies and provide field prices commensurate with current costs wildcatters will switch their efforts from gas to oil wherever possible. The record of the gas companies in assisting the independent producer with dry-hole money and by purchase of some of his leases also is far inferior to that of the major oil companies, he said.

Gas Regulation Attacked

Eckert also emphasized the necessity for establishment of a standard "cubic foot of gas" to eliminate the varying bases for pressure and temperature and other factors which are time-wasting and confusing in the making of contracts.

With the independents drilling about three-fourths of the wildcat wells and getting dry holes five times out of six, Eckert said, they are on the whole playing a losing game and if the daily losses were added up nationally they would be large enough to make a sizable cut in the national debt. The occasional lucky strikes get big publicity, he commended wryly, but like the horses that "also ran" the failures go almost unnoticed.

The three big issues facing the gas industry today are rates, government allocations and storage, the meeting was told by Edward Falck, wartime director of the utilities division of the War Production Board and now a consulting engineer in Washington.

Falck called for a "new concept" of rate regulation by the Federal Power Commission both to stem the flight of consumers from higher-priced coal and oil to gas and to permit the gas industry to work toward a better balanced supply and demand position.

Falck was especially critical of the Federal Power Commission's adoption of the wartime expedient of allocating natural-gas supplies between companies, warning that this is an issue of policy which must be resolved to eliminate uncertainties in planning for the future. He expressed doubt whether the commission's practice would prevail over private contracts if the matter were taken to the courts, but admitted that because of the serious supply situation there was little inclination to test the matter at this time. However, he pointed out, some companies which have gone out aggressively to make supply contracts are being penalized when their gas is taken away from them and given to others, and the practice of allocating gas, if continued, will put a damper on such efforts.

Storage, Falck said, is a complex business problem which only now is being attacked in a big way. One of the big questions is whether the consumer or the utility should provide for standby service. In California, industrial gas contracts provide that the customer shall have equipment to use alternate fuels when gas supplies must be cut off, but this practice is rarely used in other parts of the country. Eventually, he suggested, the gas and oil industries might get together to assure uninterrupted fuel service to industrial consumers, but at the moment the oil industry is no more eager than the gas industry for new markets.

Gas Demand Too High

With gas prices held down close to wartime levels while other commodities have skyrocketed, coal and oil have priced themselves out of a large segment of the market and there is a growing tendency to throw the whole fuel load on gas, it was declared by Christy Payne, Jr., of Peoples Natural Gas Co., Pittsburgh.

The gas industry could not assume this burden, even if it were possible to secure the necessary facilities, Payne pointed out, but the trend toward the use of gas, now curbed temporarily by restrictions on the installation of new equipment, can be diverted only by the provision of rates which will bring gas into closer competitive relationship with the other major fuels.

Some 2,100 new gas wells will be drilled this year, more than half of them by independents, Payne said, and horizons not previously tested are now being explored jointly by oil and gas interests where prospects are reasonably good. Some 769,000,000 cu. ft. daily are reaching the East from the Southwest, but the future indicated demand is so great that the industry is looking with interest to the experiments now going on in the production of synthetic gaseous fuel from coal.

Selective Plugging Explained

In a discussion of the use of resin emulsion 236 for the selective plugging of input wells, J. P. Jones, production director of the Pennsylvania Grade Crude Oil Association, reported that it had been successful in the Bradford field and in some tests in Kentucky but not in the Chatham field and results are still in doubt in the Midwest.

Jones explained that the emulsion has been found to be very selective and when used with proper preparation, plugs off loose streaks of sand that could channel water to producing wells and thereby prevent the application of pressure against the tighter sands.

Where used in the Bradford field it has cut pumping costs without affecting the rate of recovery adversely and in some instances has increased recovery. Its effect is long-lasting, but if necessary the emulsion can be dissolved. It has not been successful, however, where extremely high permeabilities or crevices have been encountered, Jones said. There are possibilities that it may prove valuable in coring.

Use of liquid petroleum gas as a standby fuel or to meet winter peak loads has progressed beyond the experimental stage and propane-air gas can be used as a substitute for natural, manufactured, or mixed gas, but at a cost so high that most natural-gas companies cannot afford to make more than 1 per cent of their total annual sales in propane-air gas and few companies can go above 2 per cent, the meeting was told by A. B. Lauderbaugh, chief gas engineer for Manufacturers Light & Heat Co., Pittsburgh.

In the Appalachian area the cost of propane-air gas is three to four times the price allowed the gas companies. However, since it is interchangeable with other gases in any proportion up to full substitution and can be sent out under a broad range of pressures so that plants can be placed anywhere on the system where needed, it offers an effective means of dealing with short-lived peak-load demands.

Lauderbaugh expressed the belief that most of the propane-air plants built or contemplated will prove to be more than an expedient to meet a temporary condition and that most of them will be needed for 10 or 15 years or longer. Combined with the procurement of gas from pipe-line companies and an adequate underground storage program, he said, they "can provide the answer to the fervent prayer of the gas dispatcher."

Discovery of eight separate new gas fields in southern West Virginia and Virginia has materially increased the scope of potential shallow production over wide areas in the two states, it was reported in a paper by E. H. Tollefson, W. H. Mayfield, and A. R. McCamey of Hope Natural Gas Co., Clarksburg, W. Va.

Proven reserves and present rates of withdrawals are sufficient to classify the area as one of the largest shallow gas supplies discovered in the Appalachian area during the past 2 decades, their report stated. Of some 278 wells drilled throughout the region only 40 have been abandoned as dry holes and some of those produced sufficient gas to have been retained as commercial wells if pipeline outlets had been available at the time of completion.

A conservative estimate of the developed reserve is about 95 billion cu. ft. on 32,000 acres for the 238 producing wells, and about 200 billion cu. ft. for 71,000 acres outlined with limits established by dry holes and low-volume wells. Gas withdrawals to date are approximately 37 billion cu. ft. The paper described the stratigraphy and reservoir conditions of the area and drilling and operating procedures, with special reference to the advantages of using modern-type spudders and the steps taken to reduce their hazards.

Unusual Well Described

A detailed report on the drilling of an 11,012-ft. test well in the southern peninsula of Michigan by The Ohio Oil Co. and Pure Oil Co. was presented by W. E. Schoeneck and T. A. Steele of the Ohio company. The well presented unusual problems because of the combination of depth, the salt section of the Salina formation, and the potentiality of abnormally high formation pressures in the Salina which necessitated the provision of special equipment described in the report. The purpose of the project was to investigate on a well-defined large structure the oil or gas-bearing potentialities of the strata from the Richfield zone of the lower Devonian into the sands and dolomites of the Cambrian, if drilling to such a depth appeared feasible.

Chip-coring of wells to determine

EDWARD FALCK CHRISTY PAYNE, JR. FRANK E. ECKERT

Three of the speakers who addressed the Eastern District of the American Petroleum Institute's division of production on long-range problems of oil and gas in the area

J. P. JONES DONALD MAY W. E. SCHOENECK

Among the technical speakers at the White Sulphur Springs meeting were these three who discussed water-flooding, coring, and drilling procedures

the porosity, permeability, and saturation of oil sands, employed in nearly 4,000 wells in the Bradford field, was discussed by Donald T. May of Ryder Scott Co., Bradford petroleum engineers, who brought up to date procedures first described in 1938.

May described how chip-coring is being used as a tool to aid reservoir engineering in the Bradford field, explaining that its advantages are that standard tests of porosity, permeability, and saturation are readily made. A solvent extraction method, using pentane, permits the same chips to be used for all standard tests; oil saturation values will represent formation conditions although the formation pressure may vary widely; and water saturation values will represent formation conditions of watered-out or pay sand layers if the formation pressure is not too high.

The coal industry is entering the field of synthetic liquid fuels with a view to securing a large stable market, and synthesis also offers an opportunity for use of the finer sizes of coal not now readily disposed of, it was explained by Howard S. Turner of Pittsburgh Consolidation Coal Co., Library, Pa.

In a discussion of coal as a source of liquid fuel, Turner warned there was no hope that synthesis would prove to be a short-term answer to the problem of fuel supply, but expressed the belief that ultimately the production of synthetic liquid fuel from coal will become an attractive investment. It is on this basis, he said, that his company has undertaken a long-term investigation.

"Only if the national safety is involved would it appear proper for the Government to enter the picture with substantial financial backing," he said in discussing the Krug proposal for government development of a $9,000,000,000 synthetic-fuels industry.

Turner reported that the cost of high-test gasoline from coal, in an area where no transportation is needed to get the coal into the plant and the gasoline can be delivered to customers at the door, is 3 to 5 cents higher than current filling-station prices in the same area. To produce at a competitive price will require cheaper coal production, he said, and the industry now is working on developments that are expected to increase materially the output per miner. Gasification synthesis, he said, is the cheapest way of producing oil from coal, and there is considerable doubt whether the hydrogenation process cost can be brought down to its level.

The convention approved unanimously the slate of officers for the coming year recommended by the nominating committee, and Stewart Vockel of Waverly Oil Works, Pittsburgh, was elected chairman.

Louisiana Legislature Prepares to Adjourn With Oil Bills Unpassed

MOST of the remaining legislation adversely affecting the oil industry was considered dead early this week as the Louisiana Legislature in Baton Rouge entered the closing days of its regular session.

Adjournment is mandatory late this week, but some observers are anticipating one and possibly more special sessions later in the year. The new governor, Earl K. Long, remains in complete control of the legislature which early in the session enacted drastically increased oil and gas severance taxes.

Reports were that S. L. Digby, whom Long appointed as the new state conservation commissioner succeeding Joseph McHugh, may resign since, it was said, he accepted the appointment only on a temporary basis originally. Much interest in the state was focused on S.B. 294 which, opponents contend, would wreck the state's civil-service system. Many of the conservation department engineers and employes are now protected by the civil-service law.

Legislation still alive included S.B. 225 which requires flares and signs for geophysical crews working on the water and stipulates removal of various equipment within 5 days. Termed a "nuisance bill," it has passed the senate 25-0 and is now in the house conservation committee. Its prospects were not regarded as particularly good.

The trial de novo bill providing appeals from decisions of the conservation commission has now passed both houses and is due to become law. This measure has met no particular objections from the industry; in fact, it is considered desirable by some officials.

H.B. 125 which provides an excise tax on natural-gas producers equal to the difference between the price received by the producer and the price paid the royalty owner has been amended and been approved by both houses.

Another measure, H.B. 611, requiring operators to give royalty owners part of savings resulting from drilling units larger than 80 and 160 acres, was defeated in the house by a vote of 30-33. S.B. 341, providing a vote on a constitutional amendment exempting royalty owners from oil and gas severance taxes, also was killed.

H.B. 322, setting up a fund of $50,000 to study uniform severance-tax rates in states in the Southwest, still is in committee. The drastic pollution bill, S.B. 279, was voted down. A measure to remove the exemption given filling stations to the chain-store tax is still in committee. H.B. 523 which would prohibit export of crude oil by refineries with production until needs of domestic refineries were satisfied, failed to pass the house.

The bill reducing permissible truck loads, H.B. 279, has been amended to eliminate its most objectionable features and is expected to be enacted. It has passed the house and is in senate committee. Another bill raising truck license fees, H.B. 808, is considered dead.

Louisiana Officer Favors Present Allowables System

NEW ORLEANS.—S. L. Digby, Louisiana's new conservation commissioner, has no plans at present for any change in the state's basic oil allowable system.

Digby, a former Monroe, La., attorney, said here that requests for increased allowables will have to "stand on their own merits." The new commissioner, who took office only late last month, said his experience with the commission is not yet sufficient for any decisions on major policy changes.

As for allowables changes, he added he hoped new discoveries will make any upward revisions unnecessary. At present, Louisiana's allowables are based on depth scales, permissive production increasing with depth.

Paul B. Habans, New Orleans, has been named attorney for the commission, Digby said.

Government Asks Bids for Royalty Oil in Wyoming

WASHINGTON.—The Interior Department has called for bids for the sale of approximately 5,700 bbl. monthly of government royalty oil in Montana and Wyoming, to be opened in Washington July 13.

The offer consists of about 3,300 bbl. a month from the Madison formation of Elk Basin field, Montana and Wyoming, and 2,400 bbl. from the Cat Creek field, Wyoming.

Sale will be made in accordance with the Act of July 13, 1946, which extends to owners of small refineries with insufficient supplies a preference to buy government royalty oil to maintain operation of their plants.

this week

INTERNATIONAL—Venezuela proceeding with plans to create government oil company. . . . Would compete with present concessionaires. . . . May take over semiproven areas surrendered from exploration concessions. . . . ¶American Independent Oil Co. gets concession rights to Kuwait's interest in neutral zone. . . . ¶Royal Dutch company's report shows progress of Shell group in expanding production and rehabilitating properties throughout the world. . . .

PRICES—Crude prices throughout Gulf Coast area creep upward as purchasers bid for connections. . . . No general increase but series of gravity-scale adjustments. . . . ¶Speakers tell A.P.I. eastern district meeting natural-gas prices are too low compared with other fuels. . . . Say higher price needed to stimulate discoveries. . . .

GOVERNMENT—OGD director warns that Congress is more inclined toward federal control of the oil industry than is the executive branch. . . . ¶Government agencies squabble over how much oil should be sent Europe under Marshall plan. . . . President may have to decide. . . . ¶Congressional committees still investigate oil and steel supply situations, with few results. . . . ¶Interior Department's oil bureaus start fiscal year with more funds. . . .

TRENDS—After six consecutive new high record weeks, crude production declined slightly during week ended July 3. . . . Totaled 5,471,730 bbl., off 22,720 bbl. from previous week. . . . ¶791 wells were completed that week, the second highest week this year. . . . ¶Gasoline stocks June 26, beginning of touring season, were 104,178,000 bbl., compared with 90,806,000 bbl. on same 1947 date. . . . During preceding 13 weeks gasoline stocks dropped 96,800 bbl. daily, only 59 per cent of 1947 rate. . . . ¶Meanwhile refinery production of gasoline was up 14.6 per cent, averaging 2,445,800 bbl. daily. . . . ¶Indicates total gasoline demand second quarter was 10.5 per cent over last year. . . .

PIPE LINES—Tennessee Gas Transmission Co. gets pipe rolled for trans-Arabian line but denied export license. . . . ¶San Juan Pipe Line Co., newly formed organization, seeks authorization for 26-in. natural-gas line from San Juan basin to Arizona-California boundary. . . . ¶Westward movements of crude oil triple in volume over past year. . . . ¶Chicago District Pipeline Co. receives authorization to loop existing Calumet line. . . . ¶Superior Oil Co. gives Trunkline Gas Supply Co. option on 200,000,000 cu. ft. of gas daily under 20-year contract at average price of 11 1/2 cents. . . .

REFINING—Extensive improvements by Esso Standard Oil Co. are making its Baton Rouge refinery one of the world's most complete and diverse. . . . ¶M. W. Kellogg Co. completes special vessels for export to handle high-sulfur foreign crudes. . . . ¶Shell Chemical Corp. administrative offices in San Francisco will move to New York. . . . ¶Husky Oil & Refining Co. completes additions to refinery at Lloydminster. . . . ¶First test run at Imperial Oil, Ltd., refinery at East Edmonton to be scheduled early this month. . . .

NATURAL GAS—United Gas Pipe Line Co. receives authorization to increase deliveries to full capacity in eastern Texas and northern Louisiana. . . . ¶East Tennessee Natural Gas Co. contracts to supply natural gas to Atomic Energy Commission at Oak Ridge, Tenn. . . .

This week there are nearly 600 geophysical crews searching for oil throughout the United States, including more than 400 seismograph crews. The amount of motorized equipment required by a single crew is shown in this picture of a seismograph party of Stanolind Oil & Gas Co. in Wyoming. In the first row are transportation car, survey pickup truck, reel truck, shooting truck, recording truck, party chief's car. In the back row are transportation car, two water trucks, and two drill trucks

Gulf Crude Prices Inch Upward As Gravity Scales Are Applied

by Dahl M. Duff

FIVE adjustments affecting the crude-oil price of 16 separate fields in the Upper Gulf Coast of Texas have taken place in the last few months, and one result is that practically all prices in the area are now standardized at one of three gravity scales.

These little-noticed individual field adjustments have added from 10 to 13 cents a barrel to the price paid for a total of about 23,000 bbl. daily. Latest of the adjustments was that made by Gulf Refining Co. boosting Segno crude 10 cents effective June 1.

In most cases, the adjustments were precipitated by bonus offers or previous adjustments in nearby fields. Representing a concession to producers, they reflect the present intense competition for crude-oil supplies.

The form of the adjustments has been the elimination of a differential between the price of the affected crude and the higher commonly accepted gravity scale. Taken together with similar revisions made previously over the last 2 years, the recent adjustments have wiped out the last departures from the established patterns and virtually completed the standardization process.

The same trend whereby formerly numerous individual field prices are merging together into one of a few established gravity scales is apparent in South Louisiana and to some extent Southwest Texas.

Two Differentials Remain

Along the Upper Gulf Coast, it appears that only two fields still carry a price differential and do not conform to one of the common gravity scales. Prior to the war, there were several different gravity scales in use in the area but a great many fields took their own separate prices above or below one of the scales, depending on location, manufacturing qualities of the crude, and other conditions.

Adjustments to one of the main gravity scales began after the war as the crude market began rising, and as a rule have been made at the time of a general advance. Fields are shifted from one column to another, and the changes incorporated in the new bulletin announcing the over-all increase.

There have been five general crude increases for a total of $1.30 since the end of the war, not including the 10-cent advance authorized by the Office of Price Administration in April 1946. At the time of each of these general increases, schedule revisions were undertaken. Often they were forced by competition and satisfied the complaint of a producer that his crude was as good as another with a higher price. Adjustments arose out of changes in crude values and requirements which occurred in many refineries as a result of new processing techniques and the advent of catalytic cracking.

The long period in which prices were frozen prevented many changes that normally would have been made. As one example, Esso Standard Oil Co., in the first industry-initiated increase in July 1946, raised various crudes 30, 33, and 37 cents though the general advance was 25 cents.

Several Scales Used

The three gravity scales which have become established on the Upper Gulf Coast and into which other formerly individually priced areas have merged, include a low-cold-test scale for lube-based crude which brings the highest price on the Gulf Coast for comparable gravity. This ranges from $2.64 for 32° and below to $2.76 for 29° and above.

Of the other two scales, one, the top Gulf Coast scale, varies from $2.46 for below 20° to $2.88 for 40° and above. The second ranges from $2.40 for below 20° to $2.80 for 40° and above. Flat prices are in line with one of the main scales. Conroe, for example, with about 37.5° gravity and a flat $2.83, conforms to the top Gulf Coast scale. The schedule revisions and price adjustments are placing more and more areas on the top Gulf Coast scale with the $2.88 price for 40° and above.

The three scales now generally used give a more orderly price structure and have the obvious advantage of simplicity. From the producers' standpoint, differentials are largely eliminated but where a differential is a penalty in relation to one scale it may be a premium in relation to another. Transportation differences have been wiped out in most cases, and now prices within any given general area are usually the same regardless of location.

While the current record demand for crude oil affects practically every occurrence in crude marketing, action of the several major purchasing companies in adjusting individual field prices other than at a time of a general increase is particularly indicative of the intense competition for oil. The recent adjustments reflect a desire to protect connections in the face of offers of premiums, long-term contracts and other inducements. None of the purchasing companies on the Gulf Coast—or presumably elsewhere—seems inclined, regardless of market pressure, to touch off the chain reaction and the possible repercussions in government that would result from another general advance. The individual field adjustments made recently on the Gulf Coast apparently were accomplished without disrupting the present unbalanced and delicate market in crude oil.

Informed officials say pressure on crude-oil supplies is as great, if not greater, than at any time since the war. Premium paying has shown a marked increase since the 50-cent increase was initiated last December in the hope of halting the practice.

Two gravity scales are becoming common in South Louisiana. One is comparable to the top Gulf Coast price varying from $2.46 to $2.88. The second, more widely accepted, ranges from $2.35 for below 20° to $2.75 for 40° and above.

There are still many departures from these two patterns in South Louisiana. One reason seems to be the different conditions encountered in moving the oil out of various Louisiana bayou and marsh areas. However, crude buyers look for more and more of these separately priced areas to be lifted up and placed in one of the established gravity scales.

Crude purchasing departments of the larger companies plot average gravity against price, and the resulting graphs show the gradual process by which prices are coming to a standard pattern. Before the war and in South Louisiana particularly, many fields fell haphazardly on the graphs but now practically all fall on one of the main gravity lines.

Average Price $2.57

In Southwest Texas, there are four gravity scales in use with tops, for 40° and above, of $2.95, $2.90, $2.85, and $2.80. There has been some upgrading of crude in Southwest Texas since the war but here as in other areas, minor differences in quality have become of practically no importance in the competitive effort to maintain supplies.

In the Upper Gulf Coast, the weighted average price paid for crude oil is now $2.733 cents a barrel. Average gravity is 31.9°. This Gulf Coast price is somewhat higher than the average sales price for the entire state of Texas which in May was $2.57, according to reports of the state comptroller. Highest single price paid in Texas during May, according to the state reports, was $2.93, plus a 25-cent bonus.

Individual fields adjustments made

in the last few months on the Upper Gulf Coast have been as follows:

Stratton Ridge—by Republic Oil & Refining Co., up 10 cents, effective February 1, now $2.66 for 24° to $2.78 for 30°, conforming to the low cold-test scale.

Aldine, Clodine, Fairbanks, North Houston, Rosslyn, Joyce Richardson, and Eureka Heights—Stanolind Oil Purchasing Co., up 13 cents effective March 1, now $2.48 for below 21° to $2.88 for 40° and above, the top Gulf Coast scale.

Cleveland and North Cleveland—Magnolia Petroleum Co., up 17 cents effective May 1, from flat $2.66 to flat $2.83, the Conroe price.

Shepherd, McCoy, Mercy, Livingston, and Schwab—Shell Oil Co., Inc., up 18 cents effective May 1 to flat $2.83, the Conroe price.

Segno—Gulf Refining Co., effective June 1 up 10 cents to a top of $2.88.

FCC Seeking Views on Petroleum Radio Service

WASHINGTON.—The Federal Communications Commission proposes to issue new rules governing industrial radio services, including petroleum service and has announced that all interested parties may file briefs or other written statements up to July 12, when a decision will be made as to the necessity for holding oral argument.

The rules would cover a new petroleum radio service providing facilities "for persons engaged in prospecting for, producing, collecting, refining, or transporting by means of pipe lines, petroleum or petroleum products (including natural gas)."

It was pointed out that communications along pipe lines are now provided for in the utility radio service, and certain other limited petroleum-industry communications are covered in other parts of the rules, but coordinated industry-wide communications are not now available. The new service, the commission said, will provide communications for the petroleum industry on a nation-wide basis.

A special industrial radio service also would be set up for persons engaged in construction activities and other operations predominantly rural in nature, and operations which involve an element of hazard to life and property which may be decreased by employing radiocommunication.

Finally there would be made available to all commercial interests, irrespective of eligibility elsewhere under the proposed rules, certain low-power radiocommunications systems.

If adopted, the new rules would result in the cancellation of the current rules governing the utility, geophysical, special press, and intermittent radio services, it was said.

Fullerton Field Allowable Cut by Texas Commission

AUSTIN.—Another in a series of developments concerning the allowable for Fullerton field, Andrews County, West Texas, occurred last week when the Texas Railroad Commission issued an order reducing the field outlet to about 30,000 bbl. daily.

The order cut the basic allowable of 40-acre wells in the field to 66 bbl. and established the MER at 75 bbl. daily. The new allowable was designed to restrict casing-head gas production to about 70,000,000 cu. ft. daily, the maximum capacity of the processing plant in the field. Hearings were held in April.

Though most of the operators had concurred in a reduction, Superior Oil Co. of California objected and filed a motion requesting permission to be heard in oral arguments. This was granted, and arguments set for July 7.

The allowable has been 97 bbl. daily on wells capable of making this amount and not producing with high gas-oil ratios. Under this, total allowable in April was about 45,896 bbl. daily. The field had been on a 66-bbl. allowable earlier and had been raised.

Crude Imports in April Were Three Times Exports

WASHINGTON.—The United States exported 3,538,000 bbl. of crude petroleum, valued at $10,600,000, in April, but imported 9,393,000 bbl. valued at $21,100,000, it was reported last week by the Census Bureau.

The April exports were exactly 400,000 bbl. and $1,700,000 more than those of March, but were 461,000 bbl. less, although $2,300,000 more in value, than those of April 1947. Imports were 374,000 bbl. and $1,200,000 less than in March, but 1,547,000 bbl. and $8,700,000 more than in April of last year.

In addition to crude, the bureau noted that 2,556,000 bbl. of gas and fuel oil, valued at $8,300,000, was exported in April, against 1,905,000 bbl. valued at $6,200,000 in March; 2,606,000 bbl. of motor fuel and gasoline valued at $12,400,000, against 1,669,000 bbl. valued at $8,200,000, and 1,139,000 bbl. of lubricating oil valued at $17,800,000, against 1,032,000 bbl. valued at $16,200,000.

There were also imports of gas and fuel oil to the total of 5,083,000 bbl. valued at $11,000,000, against 5,964,000 bbl. valued at $13,900,000 in March.

Journal Sends McCaslin to Houston As Gulf Coast Engineering Editor

LEIGH S. McCASLIN, JR., who joined the editorial staff of The Oil and Gas Journal in early 1947, has been appointed district engineering editor with headquarters in the Journal offices in the Sterling Building, Houston, Tex. He will have charge of engineering and operating writing for the Gulf Coast area.

McCaslin graduated from Oklahoma A. & M. College with a degree of bachelor of science in mechanical engineering (petroleum option) in 1942 and immediately joined the U. S. Corps of Engineers as a second lieutenant. He served 44 months in the Army, including 2 years in the Pacific theater, and was a major at the time of his discharge in 1946.

While attending college he was employed by Phillips Petroleum Co. during summer vacations and became an engineer with the production department of that organization following his discharge from the Army.

His articles describing current engineering and operating practices of the oil industry have been widely and favorably commented upon by Journal readers. He is a member of Sigma Tau, Pi Tau Sigma, American Society of Mechanical Engineers, American Society of Military Engineers, and other organizations. He was editor of the Oklahoma State Engineer, official organ of the school of engineering of Oklahoma A. & M. College, for 2 years.

LEIGH S. McCASLIN, JR.

International

WORLD-WIDE OIL DEVELOPMENTS

Venezuelan Officials Confirm Plans To Create Government Oil Company

by D. H. Stormont
Associate Editor

CARACAS, Venezuela.—Fears that the Venezuelan Government will enter into competition with privately owned oil organizations proved well founded last week when an official statement from President Gallegos' party, now in the United States, confirmed his Government's intention to set up a state oil company.

Authorized by President Gallegos to answer inquiries of Washington newsmen, Development Minister Juan P. Perez Alfonzo reiterated that the government was considering the formation of a mixed company for the development of Venezuelan oil. He previously had announced that a special committee was studying such a plan in an effort to determine the scope of the agency's powers.

In Caracas, well-informed oil circles felt that this step may herald the formation of such a powerful government monopoly that private enterprise may be penalized. Feeling that such action will result in "slow starvation," they cite the present predicament of private oil industry in Argentina—where government dominates the industry to such extent that private companies can no longer obtain concessions. A government spokesman indicated that the government company may become a reality before the end of the year or shortly thereafter.

First Mentioned in May

Initial announcement of the ministry's thoughts along these lines was stated by Perez Alfonzo in his annual report last May expressing concern over possible oil drainage from government lands adjacent to concessions now undergoing exploitation. The minister stated that the government may be compelled "to take rapid measures to prevent harm or drainage of the national pools by the exploitation works of the concessionaires.

"Since we are threatened by the occurrence of the situation in the near future, we are studying the problem and believe that a possible solution, framed within the juridical system now in force, would be a concession grant to a government institution or organization, which concession grant would be different in all respects from that made to private individuals. In any event, all the operations of such an organization would have to be based on the condition that it will be able to fulfill all the obligations of a concessionaire—the same as those of private companies—and that it will try to obtain other benefits that will increment its own capital. In this manner it will be possible to see—measured in bolivars—the exact advantages of the system as compared to the pure and simple concessions. Then this organization could: (a) execute directly the exploratory and subsequent exploitation operations, (b) contract for such operations, (c) enter into other contracts as may seem convenient under the circumstances. ". . . It will be the beginning of a new experience in the development of oil. A system of mixed development could be initiated which, compared with the system of development by private enterprises, represents a competition of systems logically beneficial to the national interest."

A committee composed of Drs. Manuel R. Egana and Enrique Jorge Aguerrevere, both ex-ministers of development, and Dr. Alberto Carnevali, member of the Chamber of Deputies, has been appointed to work in conjunction with ministry of development personnel in considering the possibility of the organization's creation and the scope of its powers.

While no specific recommendations have been made by the committee it is thought that the government organization will be empowered to operate along the following lines. It will have broad powers similar to the organization recently created by the Peruvian Government to handle concessions in that country. In other words, the Venezuelan agency will be somewhat a holding company for all government lands on which there are no concessions now existing. The agency would be empowered to contract for the development of these lands as it believes will result in the greatest income to the government.

May Follow Pemex

If the agency wishes to have geological and geophysical work done in order to evaluate the oil possibilities of an area, its own personnel may do the work or it may be contracted. Then if a further evaluation is desired the agency could execute or contract for wildcatting operations. Originally, however, it is felt that such work would be only of limited extent and that it would be done on a contract basis.

Thus in its initial operations the government company may follow the example set by the Mexican Government's Petroleos Mexicanos in its attempts to increase Mexican oil output without returning to a concession basis. It will seek to obtain more income for the government through contracting the work of developing possible oil-producing areas—but

there will be no large concessions granted as in the past.

A government spokesman indicated that while at first the company would be a government monopoly, later stock would be sold to Venezuelan nationals. Furthermore, according to present plans, the agency would not be an operating company initially—it would not have a large technical and engineering staff. However, as Minister Perez Alfonzo indicated in his annual report, the agency could enter into all phases of exploratory and development operations. That government agencies tend to grow and take on additional powers are matters of common knowledge.

The exact amount of government acreage lying adjacent to concessions undergoing development cannot be determined at this time. However, no new concessions have been granted subsequent to 1945, and according to present laws a company can retain for development no more than 50 per cent of each exploration parcel. Thus it would follow that there would be semiproven acreage near most discoveries that have been made since 1945.

Proven Acreage Available

One such example is that of Richmond Exploration Co. and its recent discoveries in Lake Maracaibo. The company is now selecting its desired 50 per cent of each parcel in the exploration concession and returning the remainder to the government before converting to a development status. Although Richmond has made no announcement of the extent of its new discoveries, in all likelihood some of the acreage being returned can be classed as proven.

Having such proven (or semiproven) acreage at its disposal, the state company can then make deals for its development. Being able to offer such acreage, and in relatively small blocks instead of the heretofore large exploration concession, it is thought that smaller companies can be induced into Venezuela.

In addition to the stated purpose of eliminating oil drainage from government lands, it is believed that the government is seeking to hasten the appraisal of Venezuela's oil-producing potentialities. But not so much from the viewpoint of increasing current production as from one of determining reserves so that it might better plan national development programs for ensuing years. Government officials realize that the current tight crude-oil market may be only temporary and that several years from now—when Middle East oil is more fully developed—it may not be in such a favorable position of dictation. Thus by cutting off additional concessions to private oil companies the government will force them to evaluate their present undeveloped concessions.

German Refineries Show Small Gain in Output

CRUDE-OIL production in Germany for the first quarter of this year totaled 143,900 tons, or approximately 12,000 bbl. daily, according to a Reuters dispatch from Dusseldorf.

Germany's crude-oil output for April totaled 50,141 tons, or approximately 12,500 bbls. daily, compared with the March production of 50,673 tons or about 12,800 bbl. daily.

German refineries in the British zone produced 155,893 tons, approximately 13,000 bbl. daily, of petroleum products in the first quarter of this year, about the same quantity as in the last 3 months of 1947. Crude-oil imports under the German import plan were still slow in arriving.

While the refinery output of gasoline, diesel oil, and bitumen in the first quarter of 1948 was somewhat under the amount refined in the October-December 1947 period, the output of various types of lubricants showed an increase. Consumption of fuel oil by the refineries totalled 21,000 tons, or about 5,200 bbl. daily, compared with 19,000 tons, or about 4,700 bbl. daily, in the final quarter of 1947.

The first 1948 quarter refinery output of 155,893 tons was comprised as follows (a conversion factor of 7.5 bbl. to the ton is approximately correct):

(In tons)	
Gasoline	16,004
Diesel oil	14,545
Paraffin	13,380
Lubricating oil	44,561
Bitumen	14,983
Fuel oil	12,867
Other products	39,553
Total	155,893

A total of 16,144 tons, approximately 1,300 bbl. daily, of foreign crude from Venezuela was imported into the British zone in the first quarter of this year in addition to 54,284 tons, 4,500 bbl. daily, of gasoline and 57,453 tons, 4,700 bbl. daily, of diesel oil.

No foreign crude oil was received by the United States zone for the first 3 months of this year although the zone imported 44,294 tons, 3,600 bbl. daily, of gasoline and 54,088 tons, 4,500 bbl. daily, of diesel oil.

The Bizonal (British and American) import total of 226,263 tons, 18,800 bbl. daily, for the first quarter of 1948 compares with 268,734 tons, 22,400 bbl. daily, of crude oil and derivatives imported in the last quarter of 1947.

The first postwar cargoes of Venezuelan crude oil for the Royal Dutch-Shell refinery at Monheim, Rhine, arrived at the end of May. Until then the Monheim plant had refined a monthly average of 2,500 tons, 600 bbl. daily, of German crude oil. This is now supplemented by 5,000 tons, 1,200 bbl. daily, of Venezuelan crude.

International

Gulf Exploring New Mozambique Concession

THE Mozambique Gulf Oil Co., a wholly owned subsidiary of Gulf Oil Corp., is planning to run an aerial magnetometer survey of a 45,000-sq. mile concession which was granted late in May. Mozambique is a Portuguese colony in East Africa and lies to the east and north of South Rhodesia. The island of Madagascar is across the Mozambique channel.

The Mozambique concession supposedly is in a sedimentary basin. About 40 years ago some Germans drilled a few test wells and reported oil showings. As the drilling was done with cable tools it is pointed out that the findings are more significant than if done by rotaries.

J. C. Heggblom, a Gulf geologist who recently was in the Bahamas in charge of Gulf's office there, is handling the Mozambique operation. Virgil Kauffman, president of Aero Service Corp. which conducted the Bahamas aerial magnetometer survey, has just returned from a trip to Mozambique. Aero will shortly fly a magnetometer-equipped DC-3 plane to Mozambique.

This is the same plane used in the Bahamas work. Fifteen men will comprise the party which is scheduled to arrive at Lourenco Marques, in the extreme south of Mozambique, around July 15. Thomas M. O'Malley, head of Aero's magnetometer section, will be in charge of the magnetometer work.

The area will be photographed first and a month later the magnetometer operations are scheduled to get under way. The technique of the Mozambique operation will differ in that the magnetometer flight-guidance will be done by reference to photomosaics of the area rather than by Shoran guidance as was used in the Bahamas.

A minimum of data reduction will be done in Mozambique, with the final maps being finished at Aero's head office in Philadelphia.

Cyprus Island Gets Exploration Tests

Exploration tests are being conducted for Cyprus, Ltd., a subsidiary of Iraq Petroleum Co., Ltd., by Seismograph Service Corp., Tulsa, on the island of Cyprus, where the company has had concessions for 15 years.

The main tests are being conducted at Athalassa, 4 miles north of Nicosia in the Cyprus' plains region.

Dutch-Shell Group Rehabilitation and Expansion Making Rapid Progress

THE Royal Dutch-Shell group of producing and refining companies is making rapid progress in rehabilitating its properties and expanding its activities in all parts of the world except in central Europe, it is revealed in the annual report of the parent Royal Dutch Company for the Working of Petroleum Wells in the Netherlands Indies.

Anticipating a big increase in the demand for petroleum products in Europe which must be met largely from the Eastern Hemisphere, the company is obtaining additional outside capital of approximately $30,000,000 in cooperation with the other parent of the combine, Shell Transport & Trading Co., Ltd., for expansion of production, pipe lines, tankers, refineries, and distribution facilities in its far-flung oil empire. *(The Oil and Gas Journal, June 24, page 140).*

"The Group," as the report terms the Dutch-Shell combine, increased its production of crude oil outside of the United States by 24 per cent during 1947, as compared with an increase of 14 per cent for the entire world outside of the United States and the Soviet Union. Its total production last year was 274,985,000 bbl. (753,384 bbl. per day), and the report gives world production as 3,158,710,000 (8,654,000 bbl. per day).

Production by Countries

Breakdown of the 1947 production of crude oil and natural gasoline by Dutch-Shell affiliates is given as follows, in barrels per day:

Venezuela	379,578
United States	210,151
British Borneo	35,534
Egypt	25,480
Iraq	20,704
Romania	21,249
Netherlands Indies	18,540
Trinidad	13,978
Colombia	13,096
Argentina	10,767
Netherlands	2,025
Austria	1,696
Germany	586
Total	753,384

The daily average production in Venezuela was divided among affiliates as follows: Venezuelan Oil Concessions, Ltd., 258,383 bbl. per day; Caribbean Petroleum Co., 60,885 bbl. per day; Colon Development Co., Ltd., 12,773 bbl. per day; N. V. Nederlandsche Olie Maatschappij, 47,537 bbl. per day.

Of considerable interest are the Royal Dutch company's figures on

crude production, including natural gasoline, for the world during 1947, shown in barrels per day as follows:

United States	5,446,877
Venezuela	1,192,110
U. S. S. R.	541,370
Iran	424,658
Saudi Arabia	246,164
Mexico	154,685
Iraq	96,904
Romania	79,233
Colombia	70,411
Argentina	60,027
Trinidad	56,219
Kuwait	44,466
British Borneo	35,534
Peru	37,534
Bahrein	25,781
Egypt	25,644
Netherlands Indies	21,973
Canada	21,178
Austria	17,041
Hungary	12,000
Germany	11,068
Ecuador	6,575
India	5,233
Netherlands	4,055
Other countries	17,260
Total	8,654,000

The figure for U.S.S.R., which includes Sakhalin, is admittedly an estimate.

In its own back yard the Dutch company made great progress in developing the new Schoonebeek field in Holland, which produced 1,480,000 bbl. (4,055 bbl. per day) in 1947 compared with 436,000 bbl. in 1946 (1,195 bbl. per day). Its local affiliate, N. V. Nederlandse Aardolie Maatschappij, owned 50 per cent by Standard Oil Co. (N. J.), completed 17 wells, all but 2 of which were productive. There are now 37 producing wells in Schoonebeek, and drilling is continuing.

Hampered by Revolt

In the Netherlands Indies, Bataafsche Petroleum Maatschappij is still faced with difficulties in rahibilitating its properties, due to shortages of materials and the Indonesian revolt which prevented access to some of the oil areas, but results were described as satisfactory.

At Tarakan production reached 5,581 bbl .per day in December 1947.

Production of the Balikpapan fields reached 7,613 bbl. per day in December, and the two distilling units were in regular operation. The first postwar well was completed in November in the Tandjoeng field but production was closed in pending construction of a pipe line to Balikpapan.

The Pladjoe refinery was rebuilt and is now operating in excess of its prewar capacity of 47,000 bbl. per day, using imported crude in part.

The South Palembang fields were repossessed last summer and by December were producing 25,058 bbl. per day, but the fields in Central and North Palembang were still inaccessible at the end of the year.

Tjepoe and the surrounding fields were also inaccessible, but the Sourabaya fields and the Wonokromo-Bendoel refineries produced and operated regularly.

Pangkalan Brandan remained inaccessible, and aerial photographs showed that a large part of the refinery was burned down last August. Activities have not been resumed at Boela (Ceram).

Japs Looted Oil

The Borneo fields produced 3,874,000 bbl. in 1947 (an average of 10,614 bbl. per day) compared with 2,101,000 bbl. (5,756 bbl. per day) in 1946; Sumatra, which had no production whatever during 1946, produced 2,567,000 bbl. (7,033 bbl. per day) last year; Java's output of crude was 326,000 bbl. (893 bbl. per day) compared with 90,000 bbl. (247 bbl. per day) in 1946.

The company estimates that during the occupation years the Japanese produced a total of 49,938,478 bbl. from fields of Baatafsche Petroleum Mij., and 19,316,938 bbl. from fields of Nederlandsch-Indische Aardolie Mij. This latter company has not had access to any of its fields except Boenjoe, where rehabilitation is now starting.

The activities of Nederlandsche Nieuw Guinee Petroleum Mij. are expanding rapidly, and headquarters have been moved from the island of Morotai to the new main settlement at Sorong in Northwest Vogelkop where the harbor was improved, roads started, and geological surveys commenced.

In British Borneo work progressed in rehabilitation of the fields of Seria in Brunei and Miri in Sarawak, and by the end of the year combined production was 49,000 bbl. per day, which is 2½ times the daily average production before the war. New exploration work was under way in Brunei, Sarawak, and British North Borneo. The refinery at Lutong produced 8,000,000 bbl. of products last

year, an average of 21,918 bbl. per day, which was more than in any prewar year.

In Australia some surface geological investigations were conducted in the Dutch-Shell group's concessions in Queensland, and core drilling has started there.

In spite of political disturbances, the group progressed with geophysical surveys in India, Pakistan, and Burma, and prepared to drill a deep test well the latter part of this year.

The group was also active in Africa last year, making geological surveys in Nigeria, the Gold Coast, and British Somaliland. In Egypt the production of Ras Gharib and Hurghada fields amounted to 9,300,000 bbl. (25,480 bbl. per day) in 1947, an increase of 360,000 bbl. (987 bbl. per day) over 1946. Favorable production possibilities were found by further exploration in the Sudr area on the Sinai Peninsula on the East Coast of the Gulf of Suez.

In contrast to the progress elsewhere in the world, the Dutch company had little optimistic to report as regards Central Europe. The impasse with the Romanian government led to the forcible dissolution of Astra Romana, and conditions in Austria and Hungary were little better for the same reason. In Germany the shortage of labor and material prevented much progress in rehabilitating war damage to the group's refineries, but more progress is being made in Italy. In France a merger was concluded with Compagnie des Produits Chimiques et Raffineries de Berre which gives the Dutch-Shell interests a share in a refinery on the Mediterranean to process its Middle East crude.

Cuban Test Abandoned

In the Western Hemisphere a test well in Cuba was abandoned at 10,563 ft. but geological and seismic surveys in the island were continued; the aerial magnetometer survey over the group's concession area in the Bahama Islands were completed; and in Canada it was decided to withdraw from further prospecting in some areas of Alberta, though good results were found in the Jumping Pond gas field near Calgary, and geological survey work was started in New Brunswick.

The Dutch-Shell share of production in Trinidad was 5,102,000 bbl. (an average of 13,978 bbl. per day) last year, about 25 per cent of the total output of the island, and an additional 3,114,000 bbl. (8,532 bbl. per day) was purchased from other producers there; new discoveries kept production at the desired level; and the refinery at Point Fortin was modernized

In Venezuela, production by Dutch-Shell companies rose from 357,450 bbl. per day at the beginning of 1947 to 424,000 bbl. per day at the end of 1947, while output of the entire country rose from 1,121,000 bbl. per day to 1,251,000 bbl. per day during the same period. Shell's exploration and drilling are continuing there.

Two new concessions were obtained in Colombia, bringing the group's total concessions there to 466,000 hectares. Production from the Casaba field rose from 3,209,000 bbl. in 1946 (8,792 bbl. per day) to 4,780,000 bbl. (13,096 bbl. per day) in 1947. Development of the Dificil field indicates that production there will be about 3,000 bbl. per day as soon as a pipe line is completed.

In Ecuador geological and geophysical work was conducted in the Oriente concession; a second well on the Macuma structure proved unproductive; two new wells were started in the foothills of the Andes, and preparations were made to begin drilling in the extreme east of the concession.

Operations in Peru were suspended after a survey indicated that the cost of reaching markets would not justify the expenditures required to develop production in the Montana region east of the Andes.

Anglo-Iranian Has Big Tanker Building Program

When the present tanker-building program of Anglo-Iranian Oil Co., Ltd., has been completed, there will be 156 ships of 1,845,000 summer deadweight tonnage in service. This compares with the prewar, 1939, fleet of 93 tankers with an aggregate summer dwt. of 1,000,000, and is one of the largest tanker fleets in the world.

Anglo-Iranian now has 109 tankers in service including 10 which were recently purchased from the United States. Nineteen tankers are at various stages of construction and 28 are on order. The company's large tankers are run by a subsidiary known as the British Tanker Co.

Another subsidiary, the Petroleum Steamship Co., popularly called the "little ship" fleet, operates approximately 300 vessels including coasters, tugs, barges, launches and many other types of craft. This company is now building a number of 16,000 tonners.

Topping Plant in Cologne To Be Utilized by Shell

Royal Dutch-Shell interests in Germany have arranged to have processed about 6,000 bbl. a day of crude oil at a topping plant located at Wesseling, near Cologne, according to a Reuters dispatch from Frankfurt. The crude will be imported, probably from the Middle East.

This processing may be stepped up to approximately 14,000 bbl. daily when additional refining equipment is installed at Wesseling.

American Independent Gets Kuwait Concession

AMERICAN INDEPENDENT OIL CO. has obtained from the Sheikh of Kuwait the petroleum exploration rights to Kuwait's undivided half interest in the neutral zone between Kuwait and Saudi Arabia, it was announced in London this week by Ralph K. Davies, president of the company.

The neutral zone, about 50 miles long by 45 miles wide, is administered jointly by the two countries. Saudi Arabia has granted oil rights in its undivided half interest to Arabian American Oil Co., and presumably the two companies will have to work together in developing the region. No exploration has been done in the neutral zone but it lies between two rich oil-producing regions and geologists have considered the prospects there to be favorable.

Davies did not give the terms of the concession but said his company outbid Gulf Oil Corp., Amerada Petroleum Corp., Superior Oil Co., Sinclair Consolidated Oil Corp., Burmah Oil Co., and the Dutch-Shell interests.

American Independent Oil Co. was formed last fall for the purpose of engaging in foreign operations but this is the first concession it has obtained. Davies was deputy petroleum administrator during the war. Stock in American Independent was subscribed by J. S. Abercrombie Co., Allied Oil Corp., Ashland Oil & Refining Co., Deep Rock Oil Corp., Globe Oil & Refining Co., Hancock Oil Co., Phillips Petroleum Co., Signal Oil & Gas Co., Sunray Oil Corp., and others.

French and British Form Joint African Affiliates

Three new oil companies in North Africa, all affiliates of the British Anglo-Iranian Oil Co., Ltd., and of the French Societe Generale des Huiles de Petrole, have been formed. They are:

L'Anglo-Marocaine des Petroles, with a capital of 10,000,000 francs, and headquarters at Casablanca; La Societe Algerienne des Huiles de Petrole, with a capital of 5,000,000 francs, and headquarters at Algiers; and La Societe Tunisienne des Huiles de Petrole, with a capital of 5,000,000 francs, and headquarters at Tunis.

These companies will be chiefly concerned with the distribution of aviation gasoline and supplying bunker fuel oil to ships.

Construction Making Baton Rouge World's Most Complete Refinery

by Dahl M. Duff

ONE of the largest refinery expansion programs in the nation is that now under way at the Baton Rouge, La., refinery of Esso Standard Oil Co.

Construction work of all kinds is moving ahead throughout the 1,100-acre area of the plant. Some 15 separate projects are now in process of construction, most of them scheduled for completion later this year or early in 1949.

While the Baton Rouge plant already is one of the world's largest refineries, its program is symbolical of the efforts of the entire refining industry to satisfy today's demands for petroleum products.

Many Projects Under Way

Work under way at present at Baton Rouge includes a new crude distillation unit of 58,000 bbl. per stream-day capacity, two new vacuum distillation units, and various new lubricating-oil facilities. Rated crude-charge capacity of the Baton Rouge refinery early this year was 180,000 bbl. daily with runs of about 200,000 bbl. daily through improvisations and elimination of bottlenecks. New construction is expected to add considerably to total plant capacity and provide more efficient operation.

The Baton Rouge refinery, though exceeded in total capacity by the Baytown, Tex., refinery of Humble Oil & Refining Co., is considered the largest from the standpoint of diversity of production. It was begun as a 2,000-bbl. daily skimming plant in 1909 and now manufactures a great variety of chemicals and secondary products in addition to its output of the usual petroleum products.

The following is a description of major projects now under construction at the refinery together with stream-day capacity information and estimated date to be in operation.

New crude distillation unit—atmospheric unit to produce gasoline solvent naphtha, kerosine, and gas oil for catalytic cracking; 58,000 bbl. charging capacity; to be in operation in July.

New vacuum distillation unit—to produce lube cuts, gas oil, and fuel; 9,500 bbl. reduced-crude charge from atmospheric distillation; operation expected in October.

New vacuum distillation unit—to produce gas oil for catalytic-cracking feed and fuel; 18,500 bbl. reduced-crude charge capacity from atmospheric distillation; expected to be in operation in November.

Expansion of two catalytic-cracking units and auxiliary facilities—expansion of carbon-burning capacity, pumping, and heat-exchange equipment on each unit; added gas-compression facilities; and new D & S unit. Gas-oil feed rates to be increased from 27,000 to 34,100 bbl. capacity; expected to be in operation in February 1949.

Light-ends recovery and polymer plant—new compression, absorption, and distillation equipment as well as a U.O.P.-type polymer plant. Designed to recover ethylene, propane, and propylene and convert the propylene to polymer for motor-gasoline blending. Fresh feed capacity, 26,000,000 cu. ft. per day; expected to be in operation in September.

New rerun unit—distillation unit to recover motor-gasoline base stocks from low-octane distillate. Charge rate, 7,200 bbl.; expected to be in operation in January 1949.

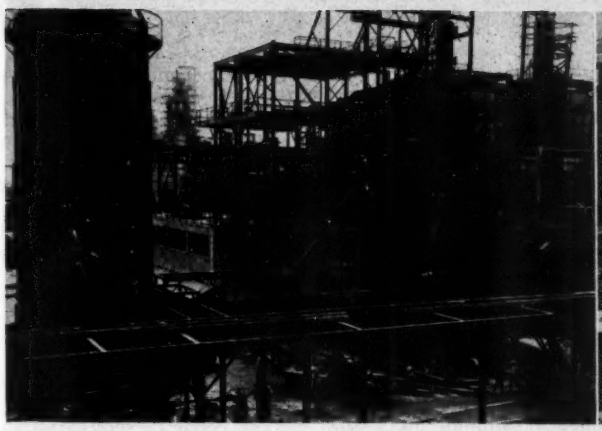
New dewaxing plant—MEK dewaxing plant for processing lube stocks. Light lube-stock charge capacity, 4,260 bbl.; expected to be in operation in June.

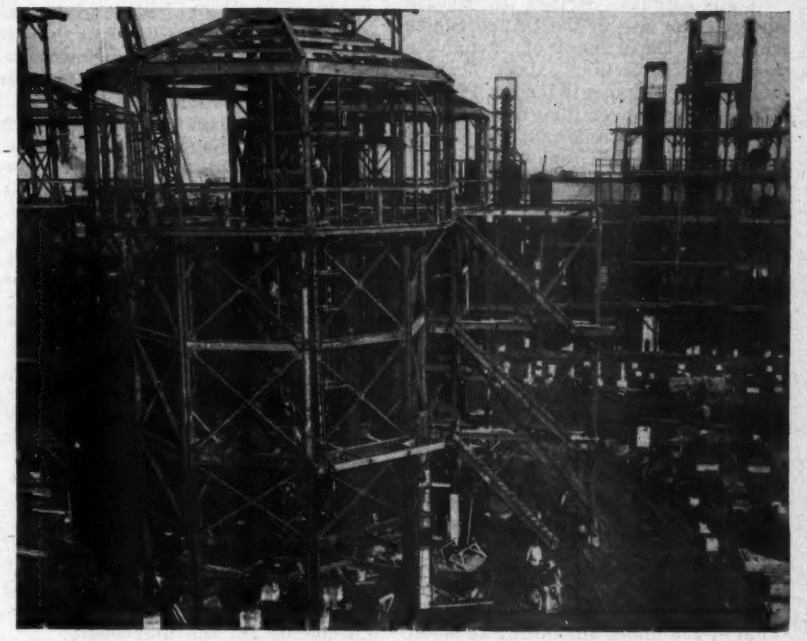
Expansion of waxy-distillate pressing capacity—installation of additional refrigeration. Increase in charge rate to plate and frame presses by 5,500 bbl.; expected to be in operation in late November.

Expansion of motor-oil canning facilities—installation of new canning equipment. Increase in canning rate from 100,000 to 300,000 cases monthly; expected to be in operation in November.

Asphalt drum filling—modernization of filling equipment. Increase in filling rates from 1,200 to 1,750 drums

Pictured here is the new pipe still, capacity of 58,000 bbl. daily, now under construction at the Baton Rouge refinery of Esso Standard Oil Co.





Upper left—MEK dewaxing unit under construction. Right is the dewaxed oil furnace with the chiller and filter buildings. Upper right—Another new pipe still in its early stages of construction. Right—One of the four banks of reactors in the new Baton Rouge polymer plant. Right is the fractionating section, showing debutanizer and rerun towers

daily; expected to be in operation in September.

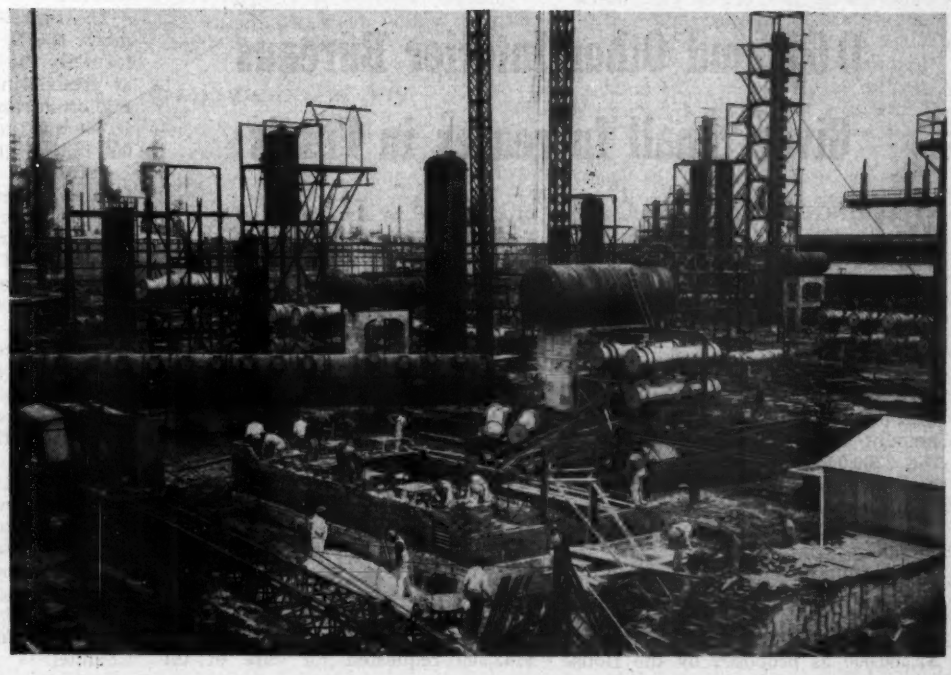
Antifreeze blending—new tanks, blending, and drumming equipment; 4,000,000 gal. annually of antifreeze; expected to be in operation in July.

Butadiene extraction—Expansion of one of two butadiene extraction units to sufficient capacity to permit shutting down the unexpanded unit. Increase of 7.5 per cent expected over present extraction capacity of two units; expected to be in operation in August.

Building and laboratories—new chemical-products analytical laboratory and new office for petroleum technical-service personnel; laboratory expected to be completed in late July; office, in June 1949.

New sales station—installation of new facilities to handle truck shipments; expected to be completed this month.

Mechanical shops modernization—centralization and modernization of refinery maintenance facilities. Program planned to be completed in stages with final completion in June 1950.



Erecting an electrical substation for the new light-ends plant. Behind this substation is the fractionating tower

Big Inch Pipe Barred From Export Will Speed Domestic Gas Project

HOUSTON. — Tennessee Gas Transmission Co. has completed arrangements with Trans-Arabian Pipe Line Co. under which Tennessee Gas will take over and use 255 miles of 30 and 31-in. pipe originally planned for the Middle East project.

Trans-Arabian decided to release the pipe for use in the United States since the Department of Commerce has delayed further export licenses authorizing shipments for the Persian Gulf-Mediterranean line. The arrangement is on a trade-out basis, and Tennessee Gas will repay Trans-Arabian with pipe from its deliveries scheduled later in the year.

Tennessee Gas announced here that the 255 miles of pipe will be used in the company's second-line construction program which is now about two-thirds completed. The Trans-Arabian pipe will allow virtually all the remaining portion to be built. Pipe of 26-in. diameter was originally planned, and a request for an amendment to the construction authorization has been made to the Federal Power Commission.

Freighters are already loading the 30 and 31-in. at docks in Long Beach, Calif. They will sail through the Panama Canal and unload in Houston and Beaumont, Tex. Some 80 miles are involved in the first shipments. A total of 255 miles, amounting to about 64,000 tons, is expected to be shipped after its manufacture at the Consolidated Western Steel Corp. at Maywood, Calif.

In San Francisco, B. E. Hull, president of Trans-Arabian Pipe Line, said his company intended to complete the line between the producing fields of Arabia and the Mediterranean as soon as conditions permit, but that in the meantime it wished to contribute toward improvement of the domestic fuel supply situation.

Gardiner Symonds, Tennessee Gas president in Houston, said Trans-Arabian's generosity in releasing the pipe will mean that his company's throughput of natural gas to the Appalachian area can be increased from 400,000,000 cu. ft. to 600,000,000 cu. ft. daily late this year. Without this scheduled pipe, the 600,000,000-cu. ft. daily figure could not possibly be reached in time to help the fuel situation in the East the coming winter, he said.

Actual laying of the pipe is slated to begin by August 1 and be completed this year.

To bring the pipe to the Gulf Coast, the same shipping arrangement as that used by Trans-Arabian in transporting pipe to the Middle East will be employed. The 30-in. lengths are inserted in the 31-in. lengths, thus cutting in half the transportation requirements for the movement.

OGD and Other Interior Bureaus Given Small Increases in Funds

WASHINGTON.—A compromise Interior Department appropriation bill agreed to in the last days of the congressional session will give the Oil and Gas Division $325,000 for its work during the fiscal year beginning July 1.

The OGD, which was given $300,000 for the year just ending, had requested $400,000 for the coming year. The amount allowed was a split between the $300,000 provided by the House and the $350,000 proposed by the Senate, and $175,000 of the fund was earmarked for Connally Act enforcement.

Last minute changes made in the funds for the Geological Survey resulted in that agency getting $2,625,000 for geologic surveys instead of $2,500,000 as proposed by the House of $2,750,000 by the Senate. The survey had asked for $2,988,000, an increase of $688,000 over the 1948 fund. The final bill also provided $690,000 for mineral-leasing activities, as proposed by the Senate, instead of the $675,000 provided by the House, and was only $20,000 less than had been requested.

The House accepted a Senate provision giving the Bureau of Mines $9,750,000, the full budget estimate, for synthetic liquid-fuel investigations for which the lower chamber originally provided only $7,250,000. Both houses had previously agreed to give the bureau the $606,000 it requested for oil and gas investigations and $91,000 for helium utilization and research, and had cut the $142,300 requested for care of the Pittsburgh experiment station to $317,300.

The Bureau of Land Management, which had requested $3,387,505 for management, protection, and disposal of public lands, was given $3,000,000 as proposed by the Senate in lieu of the $2,562,565 provided by the House.

Council Seeking Data on Oil Storage Facilities

WASHINGTON.—The National Petroleum Council committee on petroleum storage capacity sent questionnaires last week to refiners and producers, asking for information regarding their storage capacity for both crude and products.

The committee is to make a report at the next meeting of the council on crude and product storage capacity and that portion of reported inventories of crude and major products considered to be unavailable because they are necessary as processing or operational stocks.

To insure that individual company figures are kept confidential, the questionnaires will be tabulated by Fred Van Covern of the American Petroleum Institute, acting in his individual capacity since the matter has no relation to A.P.I. activities.

American Republics Corp. Back in Tanker Business

HOUSTON.—Petroleum Navigation Corp., a subsidiary of American Republics Corp., Houston, has commenced marine transportation operations with the purchase of two T-2 tankers from the U. S. Maritime Commission.

The vessels are the Republic, formerly the El Caney, and the Federal, formerly the Baldwin Hills. They are at present in world-wide trade moving crude and products. Each is of 16,460 dwt. and has a capacity of 140,000 bbl. of gasoline.

Petroleum Navigation Corp. was formed several months ago when American Republics reconstituted its marine organization. G. O. Irvine is president of Petroleum Navigation Corp. and an American Republics' vice president in charge of terminals.

Prior to the war, American Republics marine operations were carried on under Petroleum Navigation Co. This was dissolved late in 1941, and in 1942 the three tankers it operated were lost to submarines in the Gulf of Mexico. During the war, the marine department of American Republics operated some 30 vessels under general-agency agreement with the Government.

At present, American Republics has 2,250,000 bbl. of storage at its Norsworthy terminal on the Houston Ship Channel.

WASHINGTON WATCHING

BY BERTRAM F. LINZ

How Much Oil to Europe?

WASHINGTON.—President Truman eventually may have to decide how much oil is to go to the Marshall-plan countries as a result of controversies between the Economic Cooperation Administration and the Commerce Department.

ECA officials are said to have recommended approval of exports far in excess of the volumes for which the Office of International Trade was willing to grant export licenses, and so far the latter appears to have stood firm since it recently announced that export quotas for the third quarter will total about the same as for the quarter just ended. However, it was indicated some changes will be made in individual country allocations, but the amounts approved for the Marshall-plan countries will not be known until details of the quotas are announced.

Under the procedure set up for administration of the European recovery program, the OIT continues to set up quotas for controlled export commodities, and in the event of refusal to accept larger quantities which may be recommended by the Economic Cooperation Administrator the matter may be carried to the President.

OIT officials say there have been no squabbles with ECA—so far. But they say also they will continue to apply the tests which have been used in the past to determine the amounts of products that must be exported from the United States because they cannot be secured elsewhere, and in so doing are taking into consideration what the individual countries are securing from the Middle East and Venezuela.

Collectivist Infiltration

UNITED STATES delegates to the International Labor Organization, now meeting in San Francisco, are vigorously fighting European proposals which would not fit into the American economic scheme, one of which, at least, would give the Communists in labor organizations a wider field for their disruptive activities.

Charles E. Shaw, overseas labor-relations manager for Standard Oil Co. (N. J.), is one of two United States employer representatives on the committee which is dealing with the two most controversial issues.

One of these issues is a proposal for extension of collective bargaining so that any contract negotiated by a majority of employers and workers in an industry is automatically extended to all employers and workers in that industry. This is being fought by the United States delegation on the ground that it would lead to monopoly on both sides and is not in the interest of the competitive system.

This form of bargaining first sets a minimum wage, Shaw said, then sets a maximum wage, and eventually comes to establishing an absolute wage from which no employer is permitted to deviate. As applied in Europe, this system has actually resulted in American oil companies being forced to reduce wages when they joined employers' federations.

The second issue, raised under the title of management-labor cooperation, is primarily supported by the communist-dominated World Federation of Trade Unions with the obvious objective of disrupting the free enterprise system where it still operates. This so-called Works Council plan calls for factory committees which can control the volume of production and by various techniques gradually invade the field of managerial authority.

That these committees can operate for or against the plant in which they function has been demonstrated abroad, Shaw said, and it is obvious that the Communists have placed severe restrictions on them in areas where industry has been nationalized, while at the same time promoting their unbridled development where free enterprise is still in existence with the undisguised intent of disrupting that system.

Crime Does Not Pay

EDWARD B. SWANSON, assistant director of the Oil and Gas Division who heads Connally "Hot Oil" Act enforcement, is closing the books on the second most successful (financially) year since that law was enacted.

The "take" this year was $89,800, only a couple of thousand under the best year when one case resulted in a fine of $90,000, and well above the average for the 13 years the law has been in force.

With the limited force necessitated by the small budget granted by Congress, the Interior Department is unable to do anything like a clean-up job on hot-oil runners, and estimates that it catches up with only a small percentage of violators. Fines normally range from $500 up when violators are convicted in the courts, depending on the volume of the illicit operations, number of counts, and other factors.

It would take a force of considerable size and constant surveillance to stamp out hot oil running, but the department is doing the best it can with its limited funds ($175,000 this year) and normally has 12 to 16 cases in the works at all times, which is about as many as it can handle.

Some of the runners apprehended are found to have resorted to clever arrangements to defeat the state allowables and make a little folding money, as, for instance, the operator who had two leases, well separated, one in a stripper-well field and the other in the flush area. Not only did he overproduce with his flush wells, but assigned the overproduction to his stripper wells and collected the wartime subsidy which was then in effect. After his conviction as a hot-oil runner, the operator promptly dug down into his pocket and returned close to $3,000 which he had collected in subsidies.

Steel Merry-Go-Round

CHARGES by Chairman Kenneth S. Wherry of the Senate small business oil subcommittee that warehousemen who sell pipe and other products to oil and other consumers are being discriminated against by the steel producers have been challenged by spokesmen for the steel industry.

While they admit that, as a result of unfavorable freight rates and other factors, some warehousemen have been unable to maintain anything like normal stocks at competitive prices, the producers assert that the warehouses last year received more steel than ever before.

Close to 10,500,000 tons of steel products went to jobbers, dealers and distributors in 1947. That was approximately 57 per cent more than they received in 1940 and 13 per cent more than in 1946, and represented 17 per cent of total steel shipments compared with a prewar figure of 15 per cent.

The steel industry also is defending its export record, denying that the 1947 shipments were at a record high, either in tonnage or percentage of output.

The 6,543,000 tons exported last year was 10.4 per cent of the finished steel shipped, but in 1940 exports were in the neighborhood of 8,000,000 tons and represented 17.2 per cent of total shipments.

The whole trouble, the steel in-

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dustry says, is that there are many more steel-using firms in business today than there were before the war.

There are indications, too, that if consumers think things are tight now they will scream louder when third-quarter quotas are announced shortly, and the long-range outlook gives no indication of any easing of the situation. Steel men say supplies will be just as short next spring as they are now, and prices may be still higher next year. Production can't be expanded because even today raw materials cannot be gathered fast enough completely to utilize existing facilities and the industry can't divert steel to produce new equipment to make more steel.

The industry's experts won't predict when a falling off in demand will come, but they are agreed that when it does it will strike like lightning without any warning.

Lack of Storage Tanks Hampers L.P.G. in Texas

AUSTIN.—The shortage of steel is hampering construction of additional storage tanks for liquefied petroleum gas which are necessary to avoid another deficiency in the supply of this fuel next winter in Texas.

William J. Murray, Jr., Texas railroad commissioner and chairman of the Texas governor's emergency fuel commission last winter, told the annual convention of the Texas Butane Dealers Association here last week that "even where dealers and consumers are financially able and willing to install the necessary increased volume of storage, it appears very unlikely that sufficient steel for fabrication of this storage could be obtained." He read a letter from a tank manufacturer who said he has steel to make only 50 storage units daily, though his capacity is 300 daily.

Murray made several suggestions to ease any possible L.P.G. shortage during cold weather this winter. Besides assisting fabricators to obtain more steel for storage, Murray said, dealers should attempt to increase bulk storage and also should make as firm a contract as possible with sources of supply for the winter. Consumers should be told frankly about the situation and encouraged to increase storage through price reductions for large deliveries, favorable financing for purchases of larger tanks, and other incentives.

$40 Million Increase in Federal Oil Taxes Seen

WASHINGTON. — Treasury revenues from the three petroleum taxes will run between $570,000,000 and $575,000,000 for the current fiscal year, some $40,000,000 better than the preceding year, it is indicated by figures just compiled by the Internal Revenue Bureau.

For the 11 months ended with May, the bureau reported this week, $431,534,487 was collected from the gasoline tax, $38,507,661 more than for the same period a year ago; $74,438,783 from lubricating oils, an increase of $125,489, and $16,662,637 from pipe-line transportation, an increase of $1,637,228, a total of close to $522,360,000 and an increase over a year ago of $40,275,000.

Receipts for the month of May were well ahead of last year in all three categories, the bureau reporting $41,974,288 from gasoline, an increase of $9,263,604; $12,040,849 from lubricating oils, an increase of $4,741,288; and $1,737,938 from pipe-line transportation, an increase of $239,532.

Journal File Wanted

The Drake Well Memorial Park, Titusville, Pa., desires a complete file of The Oil and Gas Journal for its historical museum. Any reader willing to donate an extensive file of back issues, particularly for the early years, is asked to communicate with Paul H. Giddens, curator.

Repeal of Fire-Wall Rule Proposed by Commission

AUSTIN. — The Texas Railroad Commission has under consideration repeal of statewide rule 50 which requires a protective dike or fire wall around all permanent tanks and tank batteries.

In its place, the commission has proposed a rule requiring fire walls only in certain specified localities. The commission read the new rule at the statewide hearing last week in Austin and deferred action until the next hearing August 18 in Dallas.

The present rule requires that the dike or fire walls be able to retain one and a half times the capacity of the tanks which they surround. The new rule would require this protection only within corporate limits, in areas determined to be hazardous, or where the tanks are closer than 500 ft. to a house or highway or closer than 1,500 ft. to a school.

West Edmond and Kewanee Buy York State Oil Co.

West Edmond Oil Co., a wholly owned subsidiary of Phillips Petroleum Co., has acquired 75 per cent of York State Oil Co., Inc., Wichita, Kans. The remaining stock has been purchased by Kewanee Oil Co. Between $2,000,000 and $3,000,000 was reported to be involved in the transfer.

Property of York State includes 40 leases covering approximately 4,500 acres in Greenwood, Ellis, Barton, Pratt, Rooks and Sumner counties, Kansas, with a crude-oil production of about 1,100 bbl. daily.

Bertrand Snell, president of York State and a former congressman of New York, will retire and return to Potsdam, N. Y. The entire stock of the company was owned by Snell and members of his family. York State Oil was formed at Caney, Kans., in 1918.

Next Week's Issue:

Ten Years Under the Natural Gas Act—To management, engineers, operators: If you deal in any form with natural gas that moves into interstate commerce, this article is "must" reading for the information and background analyses that are presented.

Mechanization Program—How Tide Water Associated's program incorporating mobile construction and maintenance equipment speeds work and pays dividends.

Moving Rigs Cross Country Without Tearing Down—One of the Journal's engineering editors outlines his on-the-spot findings of some of the latest developments. One complete rig, for example, is moved ¾ mile to new location in 2 hours by the new equipment.

New Catalytic Desulfurization-Catalytic Reforming Unit—Plant description by one of the Journal's refining editors of the new installation at McPherson, Kans.

Centrifugal Compressor Program May Total 165,750 Hp.—The application of this new-type equipment to high-pressure gas transmission is discussed by the chief engineer of Texas Eastern Transmission Corp.

New Rock Drill Application in Pipelining—Equipment developments as used by Anderson Brothers Corp. (Houston, Tex.) on pipe line contract involving trenching 42 in. wide and 6 ft. deep in rocky terrain in Kentucky.

Heat Exchangers—Their maintenance and repair is discussed by engineer with Magnolia Petroleum Co. at its Beaumont refinery.

PERSONALS

Gager to Operations Head Is Record of J. S. Worden

JOHN SARTWELL WORDEN, operations manager of The Texas Co., refining division, came out of World War I a machine gunner with a determination to complete his education which he did by graduating from Princeton University in 1920. Starting as a gager at the West Tulsa plant of The Texas Co., he became successively second assistant superintendent, and first assistant, from which he was transferred to Amarillo, Tex., as superintendent in 1928.

In September 1930 he took over the Houston refinery as superintendent, and the next year assumed superintendency of the Lawrenceville, Ill., plant of Indian Refining Co., Texaco subsidiary. He busied himself there and at Port Arthur, Tex., and again at Lawrenceville until 1939 when he was made vice president and general manager of the Indian company. The following year he was made assistant operations manager of Texaco with headquarters at New York, and 2 years later was appointed operations manager and is still at that job.

Sol Smith, senior engineer in the gas department, Oil and Gas Division, Texas Railroad Commission, has resigned effective July 1 to enter private practice in consulting petroleum and natural-gas engineering. Smith will open offices in the Brown Building, Austin, Tex., and will specialize in gas reserves, reservoir studies, gas proration, and other oil and gas-well problems. He has been with the commission more than 7 years. He also has been district engineer on the Gulf Coast for Magnolia Petroleum Co. and, during the war, served 3 years with the Government in the Chemical Warfare Service.

Glen Ledingham, assistant chief geologist for Western Gulf Oil Co., with headquarters at Bakersfield, Calif., has been appointed chief geologist to succeed the late Dr. Robert W. Clark.

Don B. Priest, in the production department for General Petroleum Corp., has been named assistant to the superintendent of the company's coastal division. **A. F. Barrett** was named assistant manager of Rocky Mountain operations with headquarters at Casper, Wyo.

Rouse Simmons, a private consultant on oil properties since 1924 and since 1926 assistant to the president of Basin Oil Co., has been elected president of Republic Oil Co. Also elected at the directors' reorganizational meeting in Los Angeles were **James B. Fredericks,** vice president, and **Melvin H. Lockett,** secretary-treasurer.

E. R. PETERSON

E. R. Peterson, who has served as secretary of the executive committee of Standard Oil Co. of California for the past several years, has been named a vice president, it was announced by **T. S. Petersen,** president of Standard. Peterson joined Standard in 1923 and served in the marketing department until 1936, when he was appointed general assistant to the executive staff.

R. J. Kettenberg, division mechanical engineer for Shell Oil Co., Inc., at Ventura, Calif., has been transferred to New York where he will assume duties previously assigned to **W. E. Gilbert,** who is scheduled to make a world tour of Shell properties, following which he will report to The Hague.

F. R. Schmieder, coastal division manager for Shell Oil Co., Inc., at Ventura, Calif., for the past 9 years, has been transferred to Bakersfield to assume similar duties. He will be succeeded by **James E. Clark,** formerly Los Angeles Basin superintendent. **Paul L. Kartzke,** former San Joaquin Valley division manager, has been transferred to a similar post at Casper, Wyo.

F. M. CLEMENT

Fred M. Clement, who has recently been named region petroleum engineer for Continental Oil Co. with headquarters in Denver, has again been promoted to assistant manager, Denver region, a newly created position in the production and drilling department. Clement will be succeeded by **C. C. Frye,** region petroleum engineer, Ponca City. Frye joined Continental as a valuation clerk at Ponca City in 1933. Succeeding Frye as region petroleum engineer at Ponca is **W. E. Landrum,** division petroleum engineer, Oklahoma-Kansas division, Ponca. Landrum, a graduate of University of Oklahoma, joined Continental in 1937 as a roustabout. **Ed Nicholson,** formerly division petroleum engineer, Wichita Falls, Tex., has been named to succeed Landrum as Oklahoma-Kansas division engineer. Nicholson joined Continental in 1937 as a roustabout at Nacona, Tex. Named to succeed Nicholson is **V. E. Lewis,** formerly district petroleum engineer, Panhandle district, Borger, Tex. Lewis joined Continental 2 years ago as petroleum engineer at Wichita Falls. **R. L. Adams,** petroleum engineer, West Texas district, Hobbs, N. M., has been named Panhandle district petroleum engineer, Borger, to succeed Lewis.

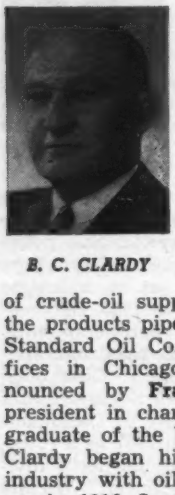
Thomas F. Lawry, formerly associated with Sohio Petroleum Co. and Ohio Oil Co. in Kansas, has been named secondary - recovery engineer for Deep Rock Oil Corp. Deep Rock recently acquired controlling interest in Sloan & Zook Co., one of the largest independent companies actively engaged in water flooding. Lawry graduated in petroleum geology from the University of Pittsburgh and in chemistry from Allegheny College. Lawry, whose experience has been in the field of secondary recovery, has specialized in water flood operations. He will make his headquarters in Tulsa.

Howard B. Wyrick, superintendent at the terminal of Shell Oil Co., Inc.'s, products line at Waltham, Mass., has been loaned to Asiatic Petroleum Corp. (a Shell subsidiary) for at least

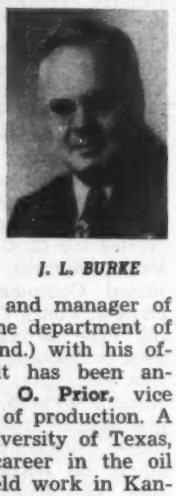
PERSONALS

6 months and will be stationed at Maracaibo, Venezuela.

Bruce C. Clardy, president of Stanolind Pipe Line Co., Tulsa, since 1946, has been appointed general manager

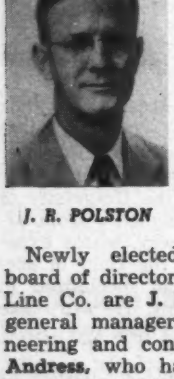


B. C. CLARDY

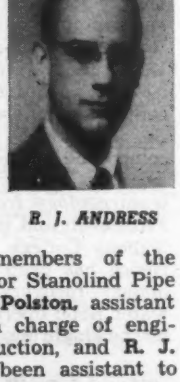


J. L. BURKE

of crude-oil supply and manager of the products pipe-line department of Standard Oil Co. (Ind.) with his offices in Chicago, it has been announced by **Frank O. Prior,** vice president in charge of production. A graduate of the University of Texas, Clardy began his career in the oil industry with oil-field work in Kansas in 1916. In 1936, at which time he was manager of the crude-oil department for Shell Pipe Line Co., he resigned to go into drilling and producing operations for himself, with the firm of Heyser, Heard & Clardy, Inc., later joining Stanolind. Succeeding Clardy as president of Stanolind Pipe Line is **J. L. Burke,** formerly executive vice president. Burke was traffic manager of Sinclair Pipe Line Co. and continued in the same capacity when it became Stanolind Pipe Line Co. in 1930. In 1945 he became a member of the board of directors of Stanolind Pipe Line and was elected vice president in charge of traffic in 1946. In 1947 he was elected vice president, and became executive vice president early this year.



J. R. POLSTON



R. J. ANDRESS

Newly elected members of the board of directors for Stanolind Pipe Line Co. are **J. R. Polston,** assistant general manager in charge of engineering and construction, and **R. J. Andress,** who has been assistant to the vice president or executive vice president since January 1947. Polston first joined the company when it was known as Sinclair Pipe Line Co. in 1922. Later he served as construction superintendent with Marland Oil Co. at Ponca City, Okla., and then with Arthur G. McKee & Co. as refinery process design and estimating engineer. In 1934 he returned to Stanolind Pipe Line as mechanical engineer, later becoming chief engineer. Andress, prior to joining the Stanolind company in 1946, practiced transportation law in Fort Worth. He had previously been identified for over 10 years with oil field and other trucking interests in Fort Worth and other parts of Texas.

W. D. Neff, formerly with General Geophysical Co. at Houston, has joined Pan-American Geophysical Co. at Wichita Falls as chief geophysicist.

Ralph O. Dietler, president of Stanolind Oil Purchasing Co., has been elected chairman of the board. **A. C. Sailstad,** executive vice president, has been named to succeed Dietler as president, and **D. L. Wolfe,** man-

R. O. DIETLER

A. C. SAILSTAD

D. L. WOLFE

ager of the executive department, has been elected vice president and a director. Dietler, who entered service of Midwest Refining Co. at Denver, Colo., in 1919, after successive promotions became assistant to the president in 1928. Three years later he was transferred to Tulsa as vice president of Stanolind Crude Oil Purchasing Co. (now Stanolind Oil Purchasing Co.) In 1940 Dietler succeeded **R. W. Ellison** as president of the company and has served in that capacity until his present promotion.

Sailstad, who becomes the new president, joined Standard Oil Co. (Ind.) in the sales department in Minnesota in 1923. In 1935 he was transferred to the general manager's office, sales research department, Chicago. At the outbreak of the war Sailstad was loaned to the Petroleum Industry Committee where he served on the supply and distribution committee, later becoming manager of committee headquarters until 1945. In 1947 he was transferred to Tulsa as manager of crude-oil purchases for Stanolind Oil Purchasing Co., and early this year became executive vice president.

Wolfe, who becomes vice president and a director, first joined Stanolind Oil Purchasing Co. in 1947 as manager, coordinating department, after he resigned from Phillips Petroleum Co. as assistant manager, economics division, department of economics. On April 1, 1948, Wolfe was promoted to manager, executive department. During the war he served on several petroleum committees and was on special assignment work for the Petroleum Administration for War and the Petroleum Industry Committee of District 2.

Dr. J. A. Tong, formerly manager for Socony-Vacuum Oil Co. in Colombia, has been appointed assistant general manager of Socony-Vacuum Oil Co. of Venezuela, with headquarters in Caracas. Tong will be in charge of the company's operations in Venezuela while **Robert Siegel,** manager for Socony, is on vacation in the United States.

Henry D. McCallum, Humble Oil & Refining Co., has been elected president of the Corpus Christi Geological Society. Other new officers are: **Norman Thomas,** Pure Oil Co., vice president; **Jimmie D. Burke,** Seaboard Oil Co. of Delaware, secretary-treasurer; and **Bob Hendrickson,** Union Oil Co. of California, member of the board of directors.

J. C. Groenewegen, craft foreman, instrument repair, at the Wilmington, Calif., refinery of Shell Oil Co., Inc., has been elected president of the Southern California Meter Association to succeed **C. G. Cortelyou,** General Petroleum Corp. **Edgar Valby,** Richfield Oil Corp., was named vice president; **George H. Forster, Jr.,** The Texas Co., secretary-treasurer; and **Harry M. Kemmerer,** Southern Counties Gas Co., auditor.

John D. Rogers, who has served in various capacities in the marine department for Standard Oil Co. (N. J.) for 32 years, has been appointed an assistant general manager of the marine department. During the war, Rogers was in charge of the expediting tanker movements in the Canal Zone and Curacao, Netherlands West Indies areas. Later he was transferred to London on special assignment with Esso Transportation Co., Ltd. He succeeds **Edward H. LeTourneau,** who is retiring after 27 years of service with the company. LeTourneau became manager of repair and maintenance in 1940, and in 1943 was promoted to the position from which he now retires.

Harold McNeil, Wichita, Kans., consulting geologist, and **Thomas N. Roberts,** Rocky Mountain district geologist for British-American Oil Producing Co. with headquarters at Billings, Mont., and Casper, Wyo., will form a partnership with offices in Wichita. McNeil, who was formerly chief geologist for Derby Oil Co., resigned in 1942 to join Great Lakes Carbon Corp. He resigned from the latter company in 1944 to enter the consulting field.

C. W. Wallace, assistant purchasing agent for Mid-Continent Petroleum Corp., has been named to succeed **S. L. Gilliam,** who has retired. Wallace will become assistant manager of the materials and purchasing department of the company. The title of purchasing agent will be discontinued.

Dr. Sidon Harris, Southern Geophysical Co., has been elected president of the Fort Worth Geophysical Society. **A. A. Hunzicker,** The Texas Co., has been named vice president; and **G. H. Harrington, Jr.,** Independent Exploration Co., has been named secretary-treasurer.

John F. Baumgaertner, assistant division controller of Ohio Oil Co., has been elected president of the Petroleum Accountants Society for the 1948-49 period. Other officers elected include: **E. C. Rogers,** Union Oil Co. of California, first vice president; **Harold D. Osborn,** General Petroleum Corp., second vice president, and **Virgil L. Anderson,** Caminol Co., secretary-treasurer.

O. G. Martin, vice president and director of Argo Oil Corp., Denver, Colo., will retire December 31, 1948, on which date he will have completed 30 years of service with Argo and its predecessor companies. In 1918 he joined Midwest Refining Co. in Denver. Two years later he was transferred to Casper, Wyo., where he spent 6 years with Western States Oil & Land Co., a Midwest subsidiary. When Western States merged with Argo in 1926 he was transferred back to Denver.

G. A. Isaacks, formerly district superintendent at Beaumont, Tex., for Stanolind Oil & Gas Co., has been named to the new post of assistant drilling superintendent at Houston. **C. W. Black,** field superintendent for the Luby area at Robstown, Tex., succeeds Isaacks at Beaumont. **T. E. Keefer,** former superintendent of Hastings field, Alvin, Tex., is now Luby field superintendent, and **D. R. Blocker,** South Houston field superintendent, has been transferred to the Hastings post. **H. H. Wagner,** field superintendent of the Turtle Bay area, Liberty, Tex., is the new South Houston field superintendent. **W. T. Moore,** formerly district engineer at Lake Charles, La., is the new Turtle Bay superintendent, and **F. L. Nelson,** petroleum engineer in the Lake Charles office, the new district engineer.

Dr. Charles E. Stoops, Jr., head of chemical department of Clemson College during the past year, has returned to the research department of Phillips Petroleum Co. Stoops became associated with Phillips in 1944.

Roy J. Diwoky, superintendent of the Whiting, Ind., refinery projects division, for Standard Oil Co. (Ind.), has been promoted to assistant general superintendent of the refinery. Diwoky, who joined the company in 1935, has served as general foreman of pressure stills at Whiting, technical assistant to the executive manufacturing staff in the general office at Chicago, and as assistant superintendent of the light oils division at Whiting.

SHIFTS—

Charles T. Johnson, engineer, Stanolind Oil & Gas Co., Oklahoma City, to San Antonio, Tex.; **John Cuvelier,** superintendent, Rowan Drilling Co., Hobbs, N. M., to Midland, Tex.; **E. H. Blackaller,** engineer, Stanolind Oil & Gas Co., Fort Worth, Tex., to Tulsa; **R. W. Fawcett,** superintendent, Ohio Co., Henderson, Tex., to Shreveport, La.

John A. Murphy, engineer, Phillips Petroleum Co., Midland, Tex., to Ponca City, Okla.; **W. A. Dawson,** geologist, Skelly Oil Co., Stamford, Tex., to Ironwood, Mich.; **G. A. Kearney,** superintendent, California Oil Co., Good Hope, La., to Pittsburgh, Pa.; **R. C. Farley,** superintendent, Ohio Oil Co., Shreveport, La., to Houston, Tex.; **I. L. Kerr,** superintendent, Ohio Oil Co., Robinson, Ill., to Findlay, Ohio.

Fred Norton, engineer, Ohio Oil Co. Robinson, Ill., to Findlay, Ohio; **John W. Barker,** engineer, Houdry Process Corp., Silver Springs, Md., to Washington, D. C.; **George F. Campbell,** foreman, Pure Transportation Co., Mt. Pleasant to Roscommon, Mich.; **Donald C. Albers,** engineer, Rocky Mountain Gas Co., Lowell to Byron, Wyo.; **Wilson C. Spicer,** geologist, Carter Oil Co., Tulsa, to Madisonville, Ky.; **R. V. Mertz,** engineer, Stanolind Oil & Gas Co., Alhambra, Calif., to Tulsa.

C. K. Walker, engineer Fluor Corp., Ltd., Los Angeles to San Francisco; **J. S. Newcomb,** superintendent, Sunray Oil Corp., Odessa to Royalty, Tex.; **E. E. Watson,** superintendent, Stanolind Oil & Gas Co., Blessing to Angleton, Tex.; **W. B. Osborn,** superintendent, Agua Dulce Co., Robstown, to Gorman, Tex.; **M. V. Wright,** engineer, Phillips Petroleum Co., Phillips, Tex., to Bartlesville, Okla.; **Ural A. Rowe,** foreman, General Geophysical Co., Ruston, La., to Lamesa, Tex.

Herman S. Seelig, chemist, Standard Oil Co. (Ind.), Chicago, Ill., to Valparaiso, Ind.; **Robert V. McAfee,** engineer, Sun Oil Co., Prentiss, Miss., to Delhi, La.; **O. R. Roberts,** engineer, Socony-Vacuum Oil Co., Augusta, Kans., to Casper, Wyo.; **R. L. Kretz,** geologist, California Co., Wichita, Kans., to Worland, Wyo; **J. J. Wright,** engineer, Stanolind Pipe Line Co., Sapulpa, Okla., to Weatherford, Tex.; **C. William Witt,** engineer, The Texas Co., Tulsa, to Wichita, Kans.; **Dales M. Strasser,** engineer, The Texas Co., Whittier to Long Beach, Calif.; **D. C. Rhodes,** superintendent, Humble Oil & Refining Co., Katy to Freeport, Tex.

DEATHS

Frank Rieber, 56, head of Rieber Research Laboratory and a geophysicist holding 48 United States and foreign patents and 27 pending patent applications on scientific equipment, died June 30 in New York. Rieber perfected the sonograph system for use in oil exploration and contributed a number of new systems for research into geophysical problems.

Frank A. Whan, 74, pioneer oil contractor of Kansas, died June 27 in McPherson, Kans.

A. Felix du Pont, Sr., 68, a director and former vice president of E. I. du Pont de Nemours Co., Inc., died June 29 in Rehoboth Beach, Del.

Robert Lee Jackson, 46, maintenance superintendent of Southwestern Oil & Refining Co., died June 14 in Corpus Christ, Tex. Prior to his association with Southwestern he served with Mid-Continent Petroleum Corp., Tulsa, from 1925 to 1941.

William F. Hart, 65, associated with National Supply Co. since 1940 and who served as assistant to the chief of the industrial division of the Pittsburgh Ordnance District in World War II, died July 1 in Cleveland, Ohio.

John M. Risk, 67, former independent oil operator of Tulsa from 1914 to 1939, died July 1 in Joplin, Mo.

At present the plant is handling only casing-head gas, recovering a compression product, 14-lb. motor fuel. The large header, center, is the discharge header for the two centrifugal compressors which will handle the first stage of compression on the casing-head-gas stream, entering the plant at a vacuum

Huge Gas-Conservation Project Now in Initial Operation Stage

by George Weber

TOTAL utilization of casing-head gas is now provided in one of the nation's largest oil and gas reserves: Seeligson field of Southwest Texas. The present, initial phase of a comprehensive conservation program is confined to gathering and compressing oil-well-separator gas for pipe-line use.

The greater part of the multizone field is being unitized for all gas excepting that produced directly with oil. Under the unit plan, all unitized gas will be processed in a jointly owned plant and residue will be returned to the several gas reservoirs for pressure maintenance. In addition, the unit will continue to purchase and process nonunitized casing-head gas from the participating area in Seeligson and from other leases in nearby fields, delivering residue for pipe-line transmission to the East.

To perform this dual service, the plant will require the greatest concentration of compressor horsepower yet installed in a single project of its kind. Commencement of the full program of processing and cycling, about 1 year hence, will rank Seeligson as a major source of gas, liquefied petroleum gas, and other liquid hydrocarbons.

Important Reserves

Seeligson is often grouped with the dozen-odd oil and gas fields which comprise the nearly continuous Agua Dulce-La Gloria trend, considered to be the nation's primary gas and condensate reserve and ranked by some, second only to East Texas in expected recovery of crude oil. Wartime development of Seeligson's many oil and gas reservoirs classes that field as the most important in the group. Discovered in 1937, the field was developed slowly and it was only in recent years that its potential size was fully realized.

At this stage of development, continuous production extends under a total of 14,000 surface acres in Jim Wells and Kleberg counties. Wells have been completed in 39 distinct producing zones or reservoirs, 8 producing gas and 31 gas and oil. Altogether, totaling the areas of all proven reservoirs, the field comprises 91,708 "reservoir-acres."

To date, 299 single wells and 190 dual wells have been completed. This total of 679 effective wells includes 664 oil wells and 15 gas wells. The latter are still shut in, and will remain so until cycling begins.

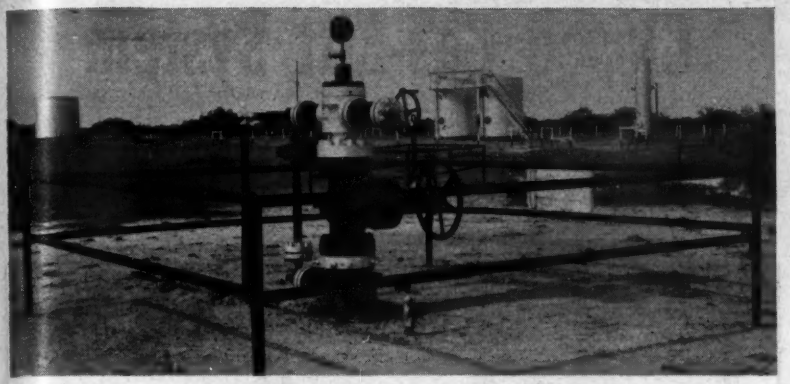
Widely known for its size, Seeligson is equally well remembered as the subject of a court test of the Texas Railroad Commission's legal powers to enforce gas conservation by shutting in oil wells whose casing-head gas is not fully utilized. Last year the commission issued a shut-down order affecting most of the oil wells in Seeligson field. A District Court injunction against this order was obtained by the operators, and the case was taken to the Texas Supreme Court. That body found that the Railroad Commission did possess the power to shut in oil wells where casing-head gas was being wasted, and there were reasonably available facilities for utilizing said gas. Thus each case must be considered on its own merits. In the particular case of Seeligson where conservation facilities were being installed, the District Court order restraining the commission from shutting wells in was upheld. In March of this year the case was dismissed on a motion from the commission as full gas utilization was realized in the field.

Groundwork for solution of the extensive gas conservation problem at Seeligson required several years of joint effort on the part of the operators. Ultimate unitization of gas properties in the extremely complex field represented a monumental assignment to engineers, geologists, and attorneys of the 10 interested companies. All companies originally interested in unitization have signed the contract and by June, 70 per cent of affected royalty interests had also signed. Unitization becomes effective July 1, 1948. Magnolia Petroleum Co. is designated as operator of the Seeligson unit, and will operate the plant and execute the cycling plan as determined by common agreement of participants.

The field is not entirely unitized for gas. Three companies, most of whose production lies in Kleberg County, will handle their gas production in a separate project. The 10 companies participating in the unit are: Magnolia Petroleum Co., Ramsey Petroleum Co., Renwar Oil Corp., Republic Natural Gas Co., W. A. Richardson et al, W. A. Richardson Oil Co., Shell Oil Co., Inc.; Sun Oil Co., Sunray Oil Corp., and Texas Gulf Producing Co.

Plant Operations

With the installation of the first three Clark 1,600-hp. compressors, initial plant operations began January 10, 1948. Residue-gas delivery to the



The jointly owned Seeligson plant now takes casing-head gas from all field wells in the participating area, as well as some leases in nearby fields

Tennessee Gas Transmission Co. commenced 12 days later. By March 15, eight compressors were in operation and all casing-head gas from the participating area was moving to the plant. Throughput has averaged 40,000 M.c.f. since that date.

At present, gas enters the plant at 15 psi. and is compressed in three stages to 1,015 psi. Cooling and liquid separation takes place between stages. Pending installation of absorption equipment, this compression product, amounting to 17,000-18,000 gal. daily of 14-lb. gasoline, constitutes the sole liquid production of the plant. Residue gas is dehydrated before pipe-line delivery at 950 psi. and additional recovery of 2,000 gal. of gasoline per day is realized on reactivation of the alumina dehydration agent.

By late summer two Ingersoll-Rand, 36,500-cu.-ft. - per - minute centrifugal compressors will be delivered and installed, adding a fourth low-pressure stage to the casing-head gas compression system. These steam-turbine-driven six-wheel units, the first of their kind to be installed in a gas-processing plant, will handle the entire incoming casing-head gas stream. They will operate in parallel, taking suction at a vacuum ranging to 10 in. Hg. and discharging to the reciprocating compressor master suction header at pressures up to 37 psig. The Ingersoll-Rand impulse-type steam turbines driving the compressors will use steam at 600 psig. and 825°.

The eight reciprocating compressors now in operation will continue to boost casing-head gas in three stages to 1,015 psig. for discharge to the processing section of the plant. Addition of the centrifugal compressors will allow a reduction in field separator pressures to atmospheric, which may well double the g.p.m. content of the gas moving to the plant. Plant is designed to ultimately handle 70,000 M.c.f. per day of charge, but compressors will not be installed unless needed.

An additional flow of 150,000 M.c.f. daily of distillate bearing gas is anticipated when the cycling program gets under way. This high-pressure gas ranges with reservoir depth from 16.5 to 35.2 bbl. per M.M.c.f. of butanes and heavier.

From this combined gas throughput, engineers expect to recover 500,000 gal. of liquid products daily, including L.P.G., motor fuel, naphtha, kerosine, and heavier oils. The processing plant will produce an estimated 100,000 gal. of propane, representing 65 per cent recovery. Recovery of butanes will run 100 per cent.

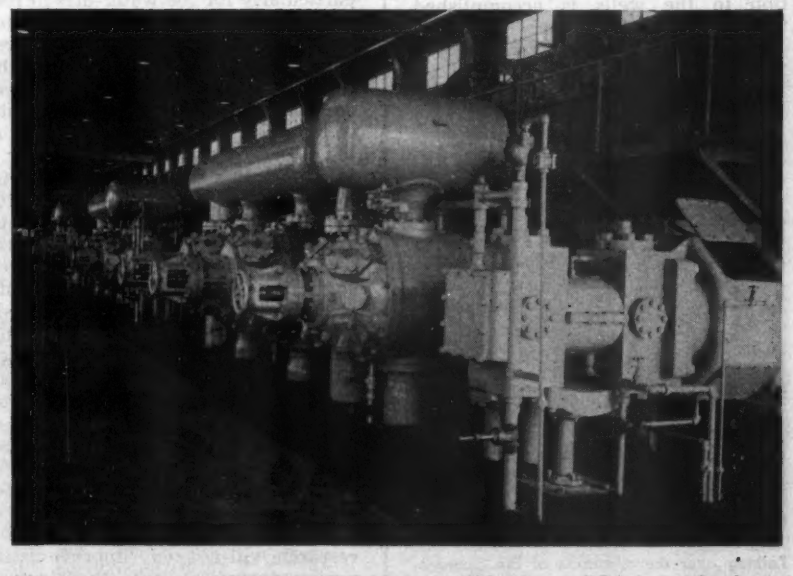
Cycling Plans

The cycling program will require about 26 producing and injection wells and drilling of additional wells is to commence this summer. Compression of residue gas to injection pressures will require four more 1,600-hp. Clark reciprocating compressors. This will boost plant compressor capacity to a total of 27,500 hp. including the two 4,200-hp. centrifugal units.

Completion of field and plant facilities for cycling will probably require another year of drilling and construction. Hudson Engineering Co. of Houston, contractor for the present compressor plant, is being given a turn key contract for the complete processing plant installation. On completion, Seeligson unit will incorporate the most complex cycling program and the largest processing plant of its kind anywhere.

SEELIGSON FIELD STATUS OF DEVELOPMENT JUNE 15, 1948

Zone or reservoir	No. wells Oil	No. wells Gas
9	...	1
10	10	..
12	...	1
13-A	41	..
13-A NE	1	..
13-C	2	..
14-B	95	..
15	...	1
16	41	2
17	7	..
18-A	2	2
18-B	...	1
19-A	6	..
19-B	84	..
19-C	188	..
19-D	43	..
20-A, B, C	87	..
20-B NE	2	..
20-E	3	..
20-F	2	..
20-G	1	..
20-H	...	1
20-W	...	1
21-A SE	1	..
21-A	1	1
21-B	17	1
21-C	5	1
21-D	6	..
21-E	3	..
21-F	1	..
21-H	1	..
21-J	1	..
21-K	...	1
21-L	4	..
21-R	...	1
22	8	..
22-S	1	..
Total	664	15



Eight 1,600-hp. Clark compressors will flank two 4,200-hp. Ingersoll-Rand centrifugal compressors in the casing-head-gas compressor bank which will boost 70,000 M.c.f. daily from a vacuum of 10 in. Hg to over 1,000 psig.

Closed Gas-Lift System Operating at League City

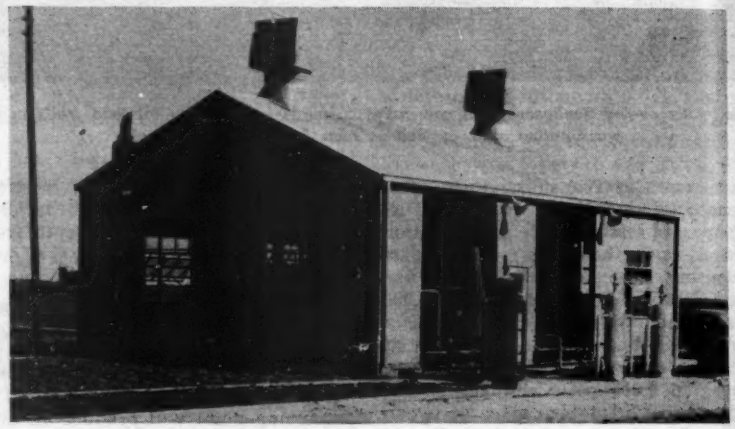
PHILLIPS PETROLEUM CO. has recently put into operation a closed gas-lift system in the League City field—25 miles southeast of Houston in Galveston County, Texas.

The new League City installation has been designed to gas lift 11 Phillips wells in that field—9 continuous-flow and 2 intermittent-flow wells. Most of these wells are producing from an 8,700 ft. upper Frio sand. In a recent month, the average daily total production of these wells was 4,456 bbl. of water and 533 bbl. of oil—a per-well average of approximately 400 bbl. of water and 50 bbl. of oil. Average gravity of the oil is 38° A.P.I. and average gas-oil ratio is 1,000 to 1.

In a closed system, such as the League City installation, the gas-lift gas and the produced gas are separated from the oil at the tank battery. The required amount of gas is then returned by compressors to the producing wells for lifting additional oil. The formation gas produced with the fluid is excess once the closed system has its full charge of gas. This excess gas can be used for lease fuel purposes and if a market exists it can be sold.

Heart of the system is the compressor station with two gas-driven, 300-hp., 600-r.p.m. compressors—one two-stage and one three-stage. (Two two-stage compressors were desired for the installation, but availability resulted in one three-stage compressor being purchased.) The two compressors are designed to handle 3,363 M.c.f. of gas daily (at 14.65 psia. and 60° F.). The 6-in. suction line picks up gas from three tank batteries. This gas leaves the separators at around 60 psi. Before entering the compressors it passes through two scrubbers. Discharge pressure from the compressors averages 800 psi. Distribution to the wells is accomplished through a 4-in. field line.

Talking over the operation of the compressor plant are Ed Jobin, engineer; Jasper N. Butler, station operator; and James C. McNatt, district engineer



This compressor station houses two gas-driven, 300-hp., 600-r.p.m. compressors which are the heart of the League City closed gas-lift system. These two compressors are designed to handle 3,363 M.c.f. of gas daily

Gas-Lift Practice on Gulf Coast

FROM the era of the central power with its multiplicity of shackle rods emanating in all directions has evolved many new and diversified means of artificial lift. Today, the producing operator has a choice among a large number of mechanical, hydraulic, and electrical lift methods. Notwithstanding advancement in the more modern equipment, many Gulf Coast producing men are applying refinements to the older art of gas lift and are finding this means economically advantageous, particularly for the water-driven reservoirs in that area.

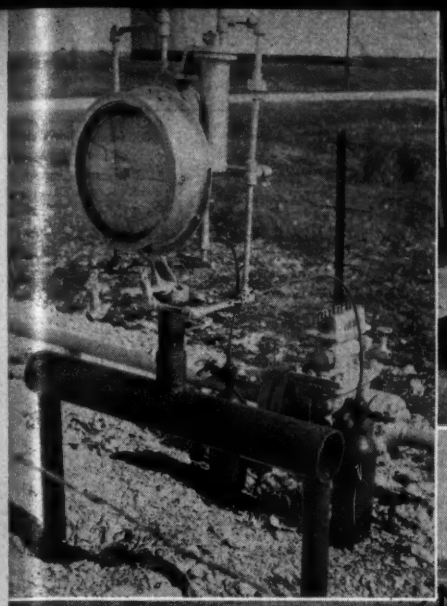
The current gas-lift trend is towards a so-called "closed, rotative system," in which gas is consecutively compressed, delivered to the well or wells for lift, separated from the produced liquids, returned to the compressor, and the cycle repeated. The excess, or formation gas, is vented. The wasteful practice of utilizing gas from a high-pressure gas well for lift purposes and venting all such gas to the air is avoided in the closed-lift systems.

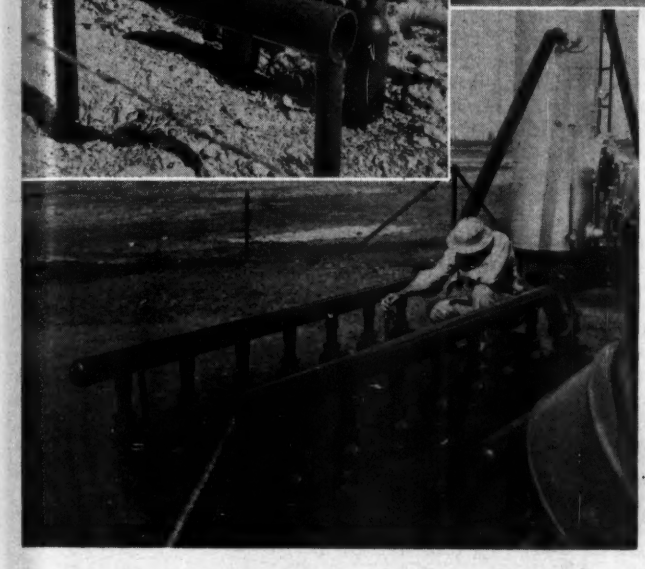
Conventional gas-lift practice is followed with wells produced by intermittent as well as by steady flow methods. The closed rotative lift systems are better adapted to continuous flow lift and the preponderance of wells in such system are produced in such manner.

Engineers are now able to determine the work and energy relationships in closed continuous flow with a higher degree of accuracy than is generally attainable with other lift methods. The amount of useful work that is accomplished by the injected gas as well as the total horsepower input to the system affecting any particular well may be readily obtained. From these, the over-all gas lift efficiency may be determined.

By making use of some fundamental gas compression relationships, one company on the coast is now compressing gas for almost one-half of conventional cost per M.c.f. This is accomplished by keeping the intake to the compressors at a high value (approximately 70 psig.). By keeping the compression ratio down, nearly twice as much can be compressed per brake horsepower-hour as could be done at 10 to 15 psig.

The gas-lift field, though old, has not been fully exploited. Further research will not only improve existing methods but should increase its range of application to the stripper stage of production where it has never gained a foothold.





These two scrubbers are in the suction line ahead of the compressors. An automatic control has been installed on the scrubber at the left to prevent oil from entering the compressor cylinders. In the background can be seen the meter on the discharge line to the field

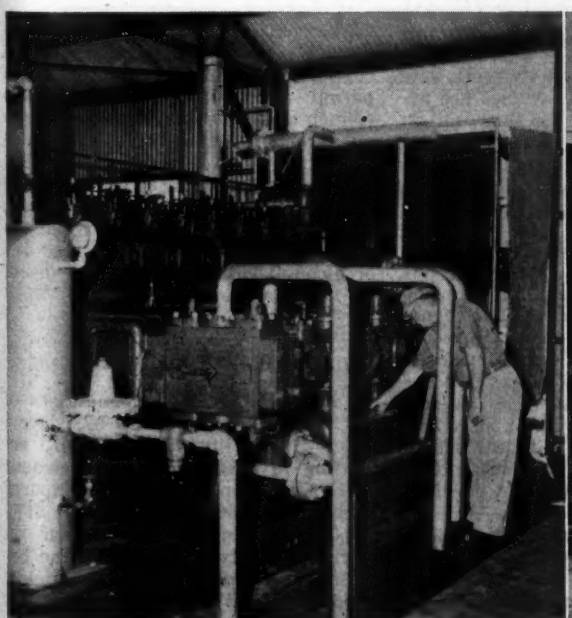
Upper left: This meter is on an input line to a gas-lift well. The two cylindrical objects are drip pots to prevent liquid from getting into the meter. Above: A seven-line test header permits individual well tests at the tank battery

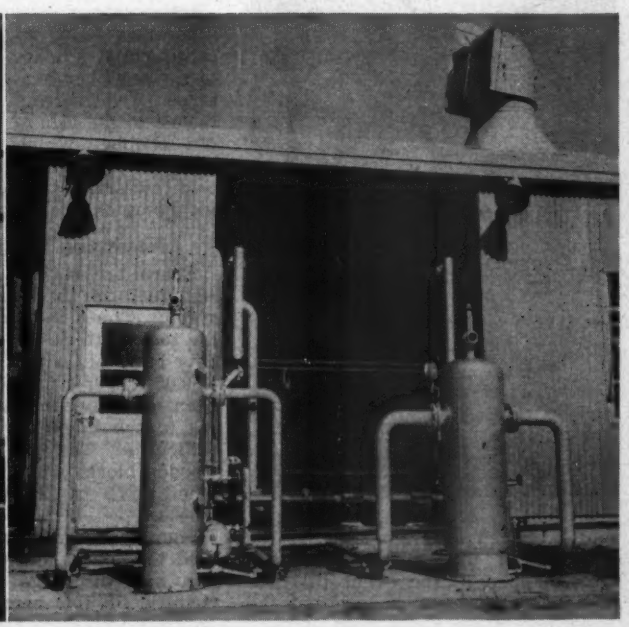
Control Features

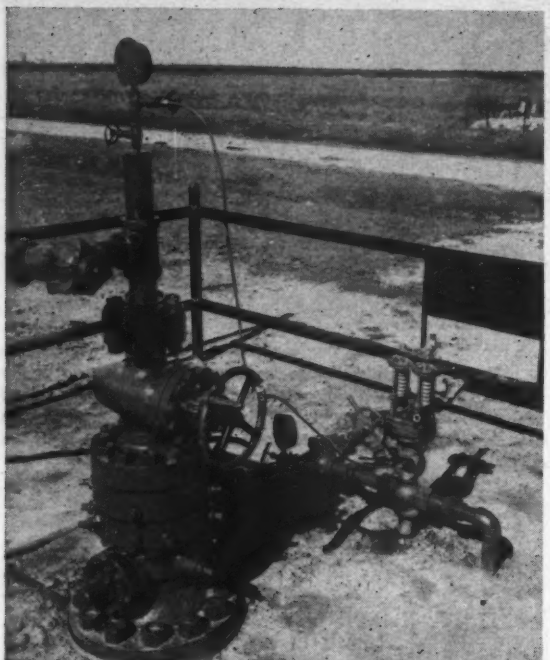
Two safety and control measures of interest have been included in the system. A motor valve and controller have been placed on the suction line, ahead of the compressors, to regulate suction pressure with relation to discharge pressure. If the discharge pressure goes above 800 psi., the suction pressure is reduced. If the discharge pressure gets as high as 850 psi. (because of freezing in the line, for example), the entire system is shut down. The motor valve accomplishes this shut down by closing off the suction line. As the 2-in. fuel line to the compressors is tied into the suction line, this action shuts off the compressors.

The second safety and control measure has been instituted to pre-

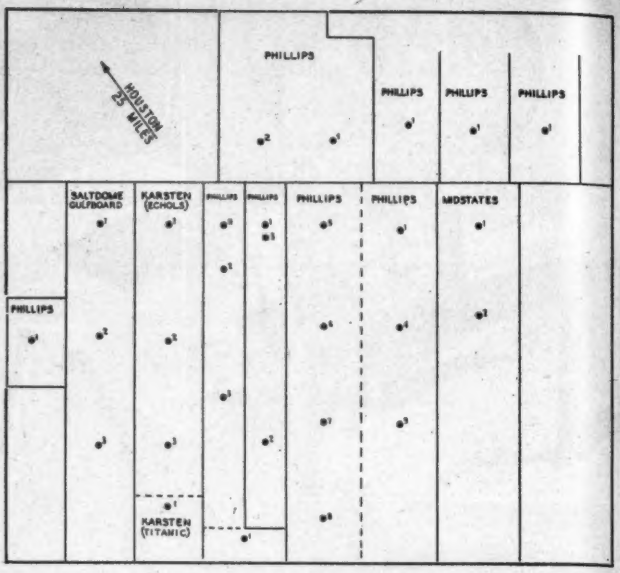
Left: This is one of the two gas-driven, 300-hp., 600-r.p.m. compressors used to provide gas for the League City gas-lift system. Right: These interstage scrubbers are located at the back of the compressor station. A large radiator on one of the two compressors can be seen in the opening of the sheet metal building





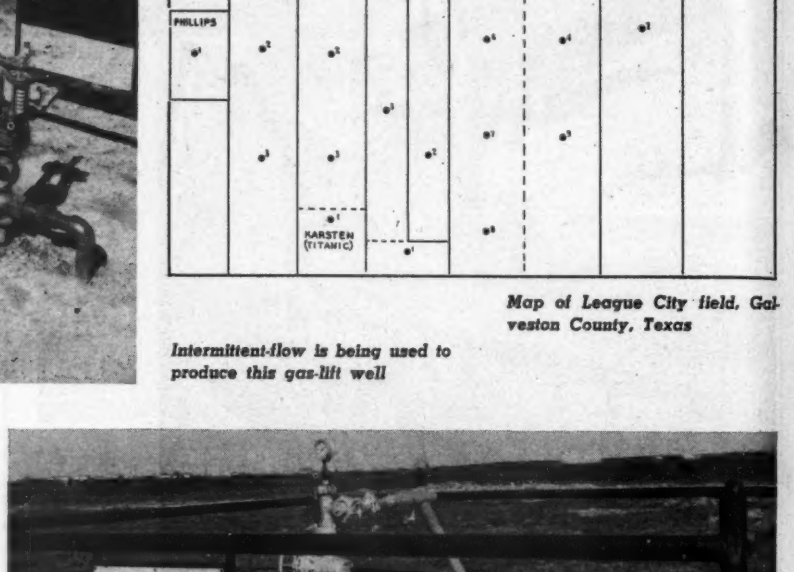


Intermittent-flow is being used to produce this gas-lift well



Map of League City field, Galveston County, Texas

Below: This outside view of the compressor station shows the compressor exhaust muffler. In addition, the motor valve and controller used to regulate suction pressure in relation to discharge pressure can be seen. If the discharge pressure goes above 800 psi., suction pressure is reduced. If the discharge pressure gets as high as 850 psi., the entire system is shut down



This freshly painted and cleaned up well-head site is typical of the producing wells at League City. This particular well is a continuous-flow gas-lift producer

vent produced oil from entering the cylinders of the compressors. This could happen in the event that the suction pressure got so low that the separators failed to dump. For this contingency, a float has been installed in the scrubber nearest the tank batteries. Two mercoid switches are attached to the arm of the float. Oil in the scrubber, which causes the float to rise, will in turn activate the mercoid switches and ground out the magnetos on the compressors.

Interesting Design Features

There are several interesting design features in connection with the system. The 6-in. suction lines from the tank batteries to the compressors have been laid with a continuous drop of 0.05 ft. per 100 ft. of line. This has been done to eliminate fluid collecting in the line with the consequent difficulties. The line has been set on wooden blocks which in turn are fastened to 2 by 2 by 2-ft. concrete blocks.

Four different devices have been used to support and contain the suction and discharge headers in the vicinity of the compressor station. These consist of guides (which allow longitudinal movement only, and support the pipe), anchors (which permit no movement), hold downs (which allow horizontal movement in all directions, none vertically), and supports (which support pipe, only).

To prevent freezing in the discharge lines, alcohol is injected into the gas stream when necessary. During the winter months, around 16 qt. per day of alcohol was injected by means of a small gas-operated pump.

Imperial Expenditures

CALGARY, Alta.—Expenditures of $54,000,000 will be made in Alberta this year by Imperial Oil, Ltd., according to a statement by president H. H. Hewetson. The figure compares with $31,000,000 in 1947. About $17,000,000 will be spent this year on additions to fixed assets, and the remainder on exploration for new fields, production and marketing.

Motor Oils—1948

by J. C. Geniesse and J. F. McGrogan

THE evolution of lubricating oil from the heavy crude oil as taken from the ground to the modern motor oil forms one of the most interesting stories ever contemplated. In the early days crude oil was used for various purposes including illumination, medicinal, and heating, as well as for lubrication. In fact, at one time the sale of petroleum oil for treatment of wounds reached sufficient volumes to warrant its recognition as an international business. As a lubricant the crude oil had to compete with vegetable and animal oils which had been used since the dawn of civilization. Right then and there the oil salesman was born. He proclaimed the merits of this wonderful product bestowed by nature and when his energies were not consumed in their entirety by these activities he acted as a stock broker and even as a vendor of equipment which used petroleum products.

As automobiles became more of a necessity and less of a novelty their owners demanded more in the way of performance. The salesmen and mechanics displayed unusual talent for being able to determine oil quality by secret techniques which included visual examination, the feel and odor test, the thin and thick rating, and the way it behaved in the palm of the hand when struck by the forefinger of the other hand. These are but a few of the schemes used.

Dr. J. C. Geniesse received his degrees from the University of Michigan. He joined Atlantic Refining Co. in 1925 where he has conducted research work on lubricants, fuels, waxes, and other petroleum products. At present he is divisional director of research in the research and development department of Atlantic Refining in charge of research and development of lubricating oils, wax, and grease.

J. F. McGrogan is a senior chemical engineer in the research and development department of Atlantic Refining. For some time he was project leader in the automotive laboratory concerned with bench, full-scale engine, and field testing of lubricating oil. Recently he was advanced to a position in which he is responsible for research, development, sales service, and plant process studies of petroleum grease.

J. C. GENIESSE

J. F. McGROGAN

Recently one well-informed gentleman from the old school developed a new technique; he merely tasted the oil and could then find out if it contained enough paraffins. About this time some salesmen and mechanics with more than average curiosity became interested in the behavior of oil in engines, thereby encouraging the study of oil quality as reflected by performance. While many excellent physical and chemical methods have been evolved for indicating engine-performance quality, all of them fall short of this goal so that final evaluation must be based on engine tests.

To perform satisfactorily, these gentlemen, along with the engine designer and petroleum technologists, have cooperated since those days and will continue for years to come on the techniques of oil evaluation and utility. While many fine physical and chemical methods have been evolved for the purpose of indicating engine-performance quality they all fall short of this goal and final decisions of oil quality must be made on the engine itself. To perform satisfactorily in an internal-combustion engine an oil must:

1. Lubricate the many rubbing surfaces of the engine.
2. Seal the compression rings so that the exploded gases from the combustion chamber cannot blow-by the rings causing high power losses.
3. Cool the pistons and transfer this heat to the engine cooling system.
4. Reduce friction.
5. Withstand high unit loads without permitting metal-to-metal contact.

These features are but a few of the requisites of a good motor oil. Technological developments in the field of internal-combustion engine lubrication has received extra stimuli during the war years. It is felt that some description of the many terms used in connection with motor oils may be of value to the individuals whose daily tasks in the petroleum business have not been concentrated on the research and engine testing aspects of modernized motor oils.

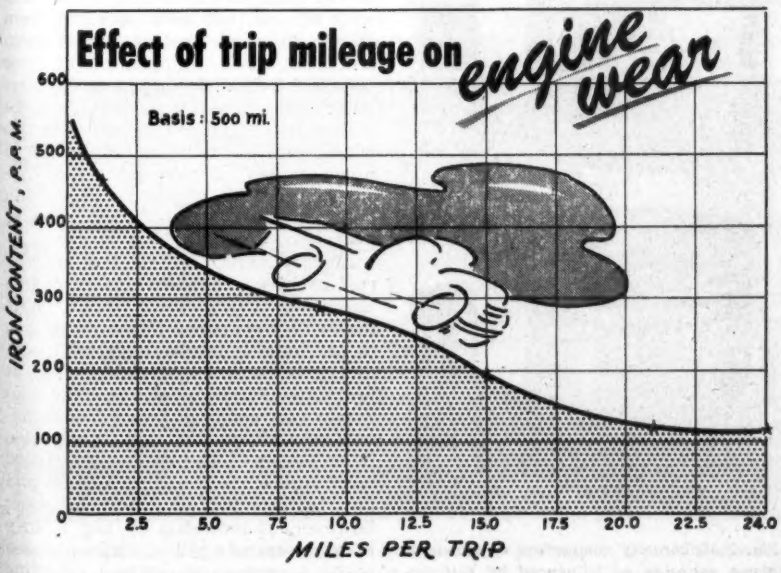


Fig. 1

Fig. 2—Pitted surface of aluminum piston removed from state highway motor equipment operated at low temperature

Motor-oil additives are scientifically prepared substances designed to impart a desirable characteristic to the lubricant as required by new engine designs and component materials as well as unusual operating conditions. To operate an engine at low temperature the lubricant viscosity must be such that the starting motor will overcome viscous resistance in the lubricated areas and permit cranking speeds sufficient so that the engine will start. All lubricating-oil fractions are composed of an enormous number of molecules varying widely in molecular configurations depending on the crude source and method of refining. It has been found that these oils vary in their viscosity change with temperature. The use of viscosity index to describe this change is familiar to all. In recent years, additives have been developed which improve this property of an oil. These materials are generally high-molecular-weight resins and while new oil-viscosity determinations indicate significant improvements with their use, field trials in actual engines have shown this property is not always retained.

Pour Points of Oil

A second consideration in starting the engine at low ambient temperatures is the pour point of the motor oil. Here again the source of the oil and refining procedure control to a large extent the temperature at which the oil will fail to flow. For instance, a naphthenic-base oil of S.A.E. 30 classification will have a pour point of —10° to +10° F., whereas a paraffinic-base oil of the same viscosity may be solid at 40° to 100° F. Processes have been developed for removing the wax from these oils so that the pour temperature is lowered considerably. Economical refinery practice for lowering this value does not insure complete removal of all waxy components, therefore, to get low pour points the refinery may resort to the use of pour-point depressants. These materials are high-molecular-weight polymers and wax naphthaline condensation products. These additives will lower the pour point to a considerable extent. Recent studies[1] have shown these synthetically lowered pour points are not always stable. It appears that such oils when stored at cycling low temperatures will revert to their original pour points. This reversion is more pronounced with high-cloud pour-depressed blends. The American Society of Testing Materials recognized this weakness in the Standard Method of Test for Pour Points and therefore initiated a study resulting in the Proposed Method of Test for Maximum Pour Points of Lubricating Oils Containing Pour-Point Depressants.[2]

The use of engines at low temperature and prolonged periods of engine storage emphasized a condition of engine decay in the form of severe engine rusting. Considerable work was conducted by oil and chemical companies to allay this serious problem. Protection of engine metals against rusting may be divided into static and dynamic conditions. Three typical government specifications dealing with engine preservatives are:

1. U. S. Army 2-126 for oils ready for use.

2. Army-Navy Aeronautical Specification AN-VV-C-576 for oil-type base material to be blended with 1120 or 1110 aviation-grade oils.

3. Bureau of Ships 52-C-18 grade 2 for semisolid film-forming base material compounded in a solvent vehicle.

The first two specifications are concerned mainly with both static and dynamic conditions where engines are run in, then crated and stored for long periods of time. The effect of fuel decomposition products promoted rusting under these conditions. The rust inhibitor should be the type that effectively prevents rust during the storage periods and does not decompose or cause excessive engine deposits when the engine is put into operation at a later date.

The last specification consists essentially of providing a protective coating which will later be washed away with solvents and/or oil before use. The rust-preventive materials include a wide variety of chemical substances which may broadly be classified as: ethers, esters, metallic soaps, phosphorous compounds, nitrogen compounds, and organic carboxylic acids.

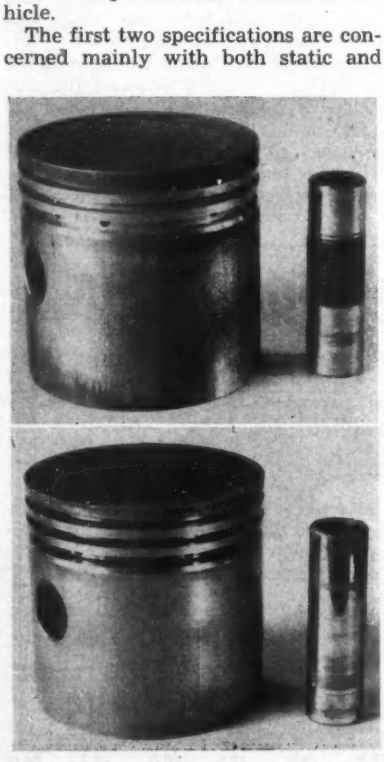


Fig. 3—Laboratory comparison of aluminum piston corrosion as influenced by rust preventive motor oil

Iron Oxidation: Engine Rusting

Peculiarly enough the practice of controlled engine rusting has been in use for some time to provide metal coatings that are wear, scuff, and galling resistant. Iron-oxide-coated rings have been commercially available for some time and are regarded by many consumers to have excellent breakin characteristics. Controlled iron oxidation and engine rusting, however, are two entirely different aspects of the problem as pointed out by F. C. Young and B. B. Davis of Ford Motor Co. The wear-resistant oxides are shown to be the ferrous oxide (FeO) and ferrous-ferric oxide (Fe_3O_4 magnetite) which can be made only at high temperatures, whereas the red rust (ferric oxide) which is so troublesome from the standpoint of the engine operator is formed on steel surfaces below 200° F. Actual field testing of privately operated automobiles proved that the length of the trip largely influenced the amount of rusting that occurred on the inside of the engine. For this purpose cars were chosen that were operated from 1.5 to 30 miles per day driving to and from work. Samples of oil were removed from the crankcases of these automobiles and by determining the iron content of the samples it was conclusively shown that trips of 15 miles or less aggravated wear considerably. Fig. 1 presents the data obtained after a total of 500 miles of operation.

A very definite indication of this rust problem was shown in an engine operating a snowplow for a state highway department. This unit ran under both low and high load conditions, with prolonged idle periods at low ambient temperatures. This condition was conducive to oil contamination with products of combustion from the fuel. The engine was fitted with aluminum pistons which should not be affected by rust corrosion; however, as indicated by Fig. 2, they became severely pitted. This appeared to be a secondary reaction resulting from the formation of iron oxide or

Fig. 4—(Left) Pistons from engine lubricated with oil containing oxidation inhibitor. (Right) Pistons from engine lubricated with base oil

salts in other parts of the engine. Three theories exist as follows:

1. The reaction of water with iron to produce iron oxide liberates hydrogen and leaves the resulting media alkaline which would cause secondary corrosion of aluminum.

2. The position of aluminum in the electromotive series indicates that reaction would occur between the iron salts and aluminum to produce the pitting observed.

3. The iron oxide formed abraded the aluminum piston.

In any event the use of antirust additives prevented this from occurring both in the field and in the laboratory. The comparison is best shown in Fig. 3 which indicates the effect of rust protection in laboratory engines operating under conditions simulating severe service duty.

Increased speed and load rating of the automotive and stationary engines have led to higher over-all operating temperatures. It was found advantageous to use improved refining processes to produce oils more resistant to sludge formation and to inhibit these well refined oils against oxidation. These inhibitors are mainly organic nitrogen, phosphorous, and sulfur compounds. The value of these materials is clearly demonstrated by the L-4 Chevrolet-engine test where oxidation products of the oil cause lacquer formation on the piston skirts and ring land areas as indicated in Fig. 4.

The advent of the alloy bearing, especially the copper-lead type, proved a boon to the engine designer but a headache to the motor-oil producer. Oxidation products of the oil corroded the bearing by selective removal of the lead. This is shown in Fig. 5 which is a photomicrograph of a copper-lead bearing cross-section. The copper and lead are not soluble in each other so that a mixture of the two forms the bearing surface. In lead corrosion by oil acids the lead is removed leaving the copper. Under the operating loads the copper matrix is compressed giving increased clearance leading to eventual bearing failure. The use of metal salts of thio phosphoric acid has practically eliminated this type failure. In general, the surface of the bearing quickly becomes coated with a protective layer of the copper salt of phosphorus and/or sulfur. This coating, along with the improved oxidation resistance of the motor oil, is responsible for the successful use of this alloy bearing. Other types of

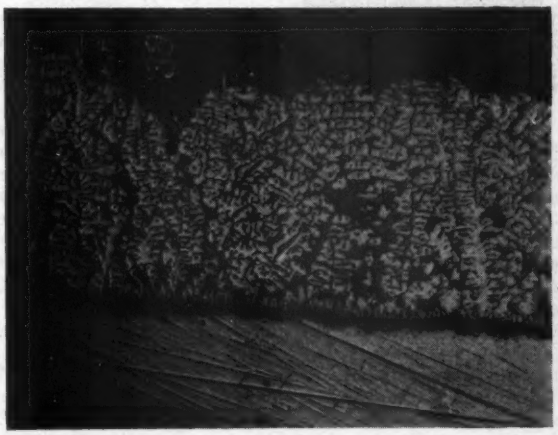


Fig. 7—Copper loss due to fuel acids

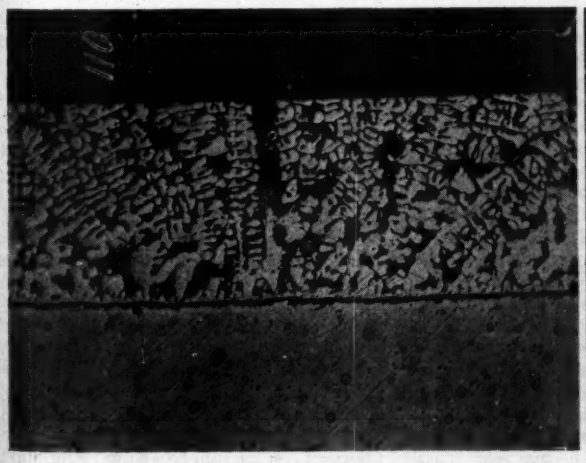


Fig. 5—Photomicrograph of cross-section of copper-lead bearing, showing lead loss due to oil acids

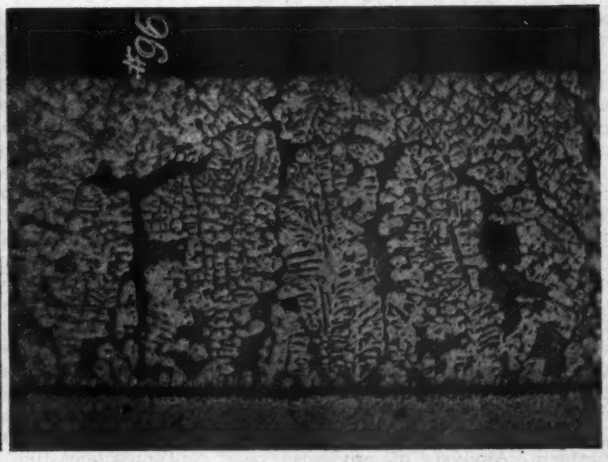


Fig. 6—Photomicrograph of cross-section of copper-lead bearing which was improperly fitted on an out-of-round journal. The bearing has cracked down to the bonded section

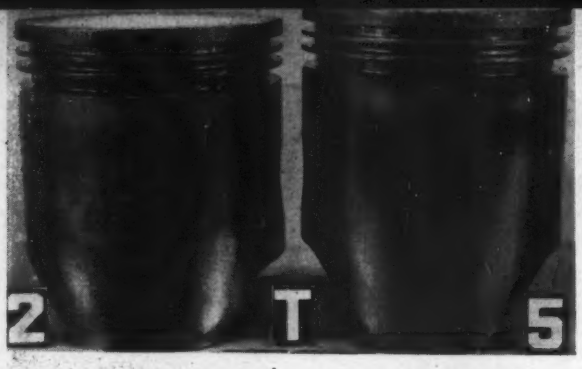


Fig. 8—(Above and left) Pistons and screen after cold engine test on fuel of good burning quality

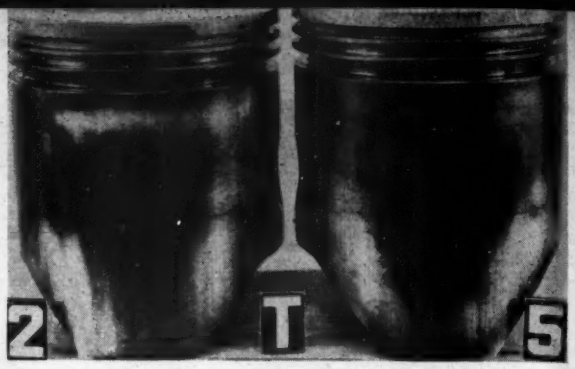


Fig. 9—(Above and right) Pistons and screen after cold engine test on fuel of poor burning quality

failure have and will continue to occur in the forms of bearing fatigue and corrosion from low-temperature operation. The former is purely a mechanical problem concerned with proper installation, maintenance of round journals, and observation of good shop practice for removal of honing and grinding products which, if present, will imbed themselves in the bearing causing premature bearing failure. Fig. 6 shows the cross-sectional view of copper-lead bearing that was improperly fitted on an out-of-round journal. In this case the bearing cracks down to the bonded section and eventually an entire piece will fall out.

Corrosion of copper-lead bearings as a result of low-temperature operation is evident when the copper is removed as indicated in photomicrograph No. 7. In this case decomposition products of the gasoline are responsible for the bearing failure. The engine operates below normal temperatures causing unburned and/or partially burned gasoline to wash down into the crankcase. These products are very susceptible to oxidation and form low-molecular-weight acids that preferentially attack copper. Increased use of crankcase ventilators and rigid maintenance of heat controls and proper carburetion have gone a long way toward solving this problem. Analysis of products condensed in a trap of a crankcase ventilator system indicates the type of materials responsible for bearing corrosion and lacquer formation. A typical analysis is as follows:

1. Eighty per cent oil which on distillation showed approximately 30 per cent gasoline dilution. This oil contained considerable black sludge.
2. Ten per cent water with a neutralization number of 48.5.
3. Approximately 10 per cent of a resinous material soluble in acetone.

Assuming that the motor oil contained enough inhibitors as previously discussed, very little difficulty should be encountered lubricating the internal-combustion engine. Field tests have demonstrated that this is true to a limited extent. Deposits in the oil control rings of an engine operating at higher than normal temperatures accumulates ringland deposits at a rate roughly proportional to the rate of oil consumption. These deposits were of negligible quantity even when oil consumption was 3 to 4 qt. per 1,000 miles. Deposits in the engine are prevalent in cases where fuel is burned incompletely and operation is intermittent.

Detergents

One large surface-transportation company operating diesel engines in units carrying heavy loads and making 10 starts and stops per mile with the engine running at idle speeds 50 per cent of the time could not run their units more than 8,000 miles because of clogged oil-control rings, filters, and heavy engine deposits. This experience was common in many large fleets until research efforts produced another family of chemicals that were added to the motor oil to impart a property commonly known as detergency. By definition it is a quality of a material that cleanses or purges. These detergents are generally metallic salts or phenolates or mahogany sulphonates which when added to motor oil function in the same way and are analogous to the role played by household soap in the family washing machine.

The advent of these fortified oils were responsible to a large extent for continued operation of bus and truck equipment during the war years. Army 2-104B oil required additives of this type coupled with oxidation and corrosion resistance to permit satisfactory lubrication of the very severe Caterpillar, G.M. diesel, and L-4 Chevrolet-engine tests. The application of these oils for civilian usage was viewed with apprehension by many who believed that the use of detergent oils in heavily sludged engines would cause all this sludge to be washed into the crankcase where it would plug up the oil-screen manifold lines and oil-control rings.

Laboratory and service tests have been conducted to determine what may happen when detergent oils are introduced into heavily sludged engines. One field test on gasoline-engine-operated trucks used for intercity delivery service was arranged and units were chosen on the basis of the most heavily sludged engines. A heavy-duty motor oil was used without flushing or in any way disturbing these deposits. All operators were told to stop the units in the event of oil-pressure failure which is indicative of a plugged screen. After approximately 6 months' operation, it was reported that no deleterious effect was produced by using the heavy-duty detergent oils, and in fact evidence of pump-screen and oil-control ring cleaning was noted. Over the road haulers, high-speed diesel engines and general delivery-service equipment have since been serviced with this oil to the advantage of the operator. One large New England bus fleet has shown less down time and increased mileage per quart of oil consumed due to freedom of

plugged oil rings and general engine deposits.

The term heavy-duty was originally coined for use describing motor oils intended for high load-high temperature engine operation. Civilian usage of motor oil is destined mainly for normal running conditions or frequent start-stop-idle operation. Milk-truck-type service aptly describes this latter condition. In the case of intercity bus and passenger car operation the engine idles 50 per cent of the time. Under these conditions the engine has little or no crankcase ventilation. Combustion of the fuel is generally poor with air-fuel ratios in the range of 8-10 to 1. Poorly burned fuels contaminate the motor oil with soot, cracked and oxidized heavy gasoline ends. The function of the detergent in heavy-duty motor oils is to disperse these particles and keep them finely divided thus preventing their coagulation and subsequent settling on the internal parts of the engine.

Effectiveness of Detergents

Microscopic studies of uninhibited mineral oils and detergent oils in engines proved the latter about four times as effective in keeping these particles finely divided. It is generally known that plugged oil-control rings lead to high oil consumption. The actual effect was of interest and led to a study in the laboratory. The effect of plugged oil rings on oil consumption was determined in the laboratory by taking used rings from a standard Chevrolet engine after 90,000 miles of operation. The rings were worn as well as plugged. They were installed in a laboratory engine and run until equilibrium oil consumption was reached at a value of 72 miles per quart of oil. The rings were then removed, completely cleaned, and replaced in the laboratory engine. After running until equilibrium conditions were reached, the oil consumption was shown to be 445 miles per quart. From this data it is readily understood why it is of utmost importance that oil-control rings be kept clean.

Further studies on the effectiveness of detergent-type oils proved that advantages can be gained by the choice of gasoline used. The FL-2 engine test conducted on a standard Chevrolet engine reveals the differences to be obtained with the same oil but different gasolines. It was pointed out in a recent paper[3] that in a study of four different fuels burned in a Chevrolet engine lubricated with the same heavy-duty 2-104B varied results were obtained. The engine was operated under the same average conditions as follows:

Oil-sump temp., °F.	205
Cylinder head (rear) temp., °F.	154
Cylinder jacket (b.t.m.) temp., °F.	168
Ambient air temp., °F.	27

The engine cleanliness rating with 100 as perfectly clean were as follows:

	Fuel cleanliness, per cent	Copper-lead bearing loss, per cent
1	95	0.22
2	77	0.32
3	73	0.36
4	42	0.18

Factors such as diolefin distribution, volatility, and copper-dish gum tend to reflect the probable behavior of the fuels in this type of test. It is unfortunate that nondetergent type oils were not included in this test since the benefits derived would be striking. A second method of test consisting of alternate idling and high-speed operation in a laboratory engine also demonstrates the degree of effect experienced by the choice of motor fuel. Figs. 8 and 9 are pistons and oil-pump screens removed from engines operating under cycling low and high temperature. Engine conditions on the low-temperature cycle were

Jacket inlet temp., °F.	125
Oil-sump temp., °F.	170
Air-fuel ratio	8 to 9/1

while the high speed-temperature cycle was controlled to

Jacket inlet temp., °F.	190
Oil-sump temp., °F.	265
Air-fuel ratio	11/12 to 1
Crankcase vent	None

Another oil company[4] found similar deposits resulting from poor combustion characteristics as well as the type of combustion product. These investigators report that the effect of increased jacket temperature is about equivalent in effect to the different fuels used. This observation is of utmost importance and emphasizes the fact that utopian operation of the internal combustion engine cannot be obtained by the improvement of one factor alone. Undoubtedly the inclusion of detergency is a significant step forward in this field but it certainly should not be construed as a cure-all. For instance, the compatibility of oil filter and motor-oil additive should be included in the survey of a prospective account. It has been shown by Oscar Bridgeman et al[5] that filtering media can be selected and treated to give either negligible or excessive additive removal from a given detergent type oil. In one particular type test it was shown that the filter medium could adsorb or absorb as much as 40 per cent of the additive in a 50-hour laboratory test. If this happens in practice the value of the oil as a dispersing medium is greatly reduced.

Crankcase ventilation should be stressed for low-temperature engine operation. By this means destructive, unstable combustion products are swept out of the crankcase before doing harm to the very finely machined portions of the engine. The methods of accomplishing this crankcase purging have been covered very well by H. L. Moor and H. L. Hemmingway[6] but it appears that the engine manufacturer should assume responsibility at this point and include a design of their choice as permanent equipment. Provisions should be made to decrease warmup time. Recent studies[7] have shown that warmup time varied considerably with automobiles judged to be in good mechanical condition by their owners. Test results proved that with ambient air temperature at 30° F. and car speed at 20 m.p.h., 20 per cent of the cars had warmed up in 5 minutes, 80 per cent by 10 minutes and 90 per cent by 15 minutes. The remaining 10 per cent required considerably more time. The above tests were conducted with gasoline considered to be of good winter grade volatility characteristics. Warmup time can be influenced by poorly adjusted accelerator pumps, stuck manifold heat valves, dirty manifold hot spots in operating coolant thermostats, poor spark-plug condition, setting, and ignition timing. These items should be considered by the design engineer who plans future car design inasmuch as improved warmup time, maintenance of engine-jacket temperature at a level of 160°-180° F., and oil sump at 180° to 200° F. along with fortified oils containing oxidation, antirust and corrosion as well as detergency will insure trouble-free engine operation.

Future higher-output engines will probably be of higher combustion pressure as a result of reduced combustion chamber volume or pressurized carburetion. Some experts believe gasoline fuel-injection systems will soon be cheap enough to warrant installation on certain commercial units. Regardless of the method, brake mean effective pressures will be greater putting more load on the lubricant and higher ring land temperatures unless improved ring designs are in the offing. Some authorities believe compression pressures will rise while not requiring too much increase in fuel octane requirement. This can be accomplished only by improved cooling of the combustion chamber and pistons. While jacket water jets will accomplish considerable advantage in this direction it is probable that oil pressure spray against the under side of the pistons will also be considered. In this case the oil must be of superior oxidation stability if it is to be used as a coolant.

Bibliography

1. Pour-Point Reversion, J. G. McNab, D. T. Rogers, A. E. Michaels of Standard Oil Development Co. and C. E. Hodges of Standard Oil Co. of New Jersey.
2. A.S.T.M. Proceedings, Vol. 45, pg. 244.
3. Study of Varnish and Sludge Tendencies of Fuels, C.F.R.-M.F.D. report at S.A.E. Meeting, June 1947, French Lick, Ind.
4. Factors Affecting Low-Temperature Engine Deposits, E. J. Bowhay and E. F. Koeing, Texas Co.
5. Oil Filters and Detergent Oils, Oscar Bridgeman, Elizabeth Aldrich, and J. B. Rowans, S.A.E. Trans. April 1947.
6. Crankcase Ventilation, H. L. Moor & H. L. Hemmingway, S.A.E. national meeting, Tulsa, November 7, 1946.
7. Engine Warmup with Present-Day Fuels and Engines, J. G. Moxey, Jr., S.A.E., annual meeting Detroit, January 1947.

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ALCOA ALUMINUM

JOURNAL-*Guide* TO

Humble Northwest Flank

Harris County, Texas

WITH nearly a dozen rigs and locations, and completion of wells in from 14 to 30 days, a new play on the northwest flank of the old Humble salt dome in Harris County, Texas, resembles an old-time boom. The activity is in an area of small acreages, called Riverside Subdivision, where farm-outs and divided fee ownerships permit close spacing, and competitive speed in completions is urgent.

Pays.—The pay is a sand in the Cockfield zone found at 4,300 to 4,500 ft., down flank and deeper than the regular pay on the higher part of the dome.

Casing and bits.—Standard casing pattern is 450 ft. of 10¾-in. surface pipe, set with 300 sacks of cement, and about 4,500 ft. of either 5½-in. or 7-in. for production string, set with 500 sacks. (Availability of pipe determines size of production string.) The average well will require six drag bits and one rock bit, either 8¾ in. or 9¾ in., depending on whether production string is to be 7 in. or 5½ in.

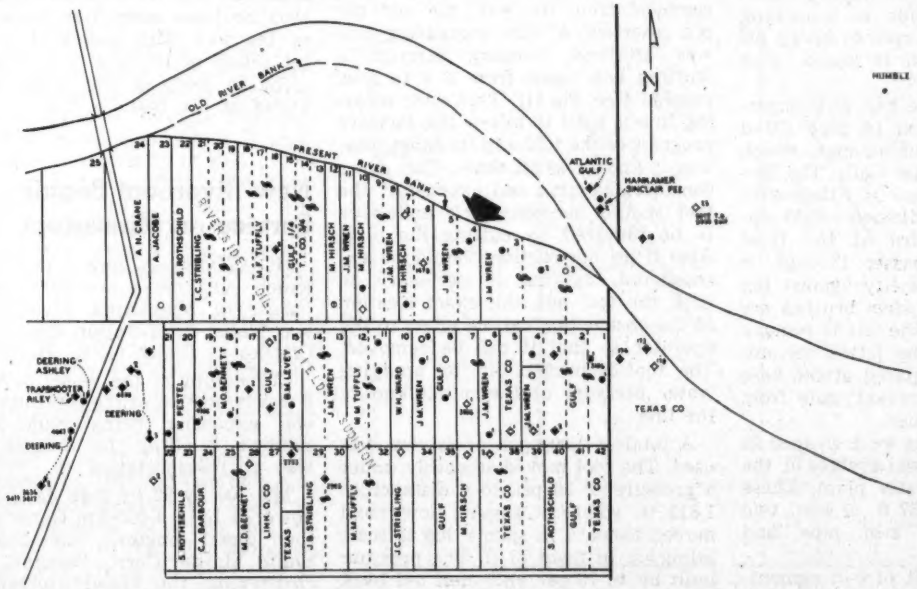
Contract terms.—Contracts are on footage plus day-work basis, with operator preparing location, supplying cement, and paying for any mud over $500. So far there have been no gas blowouts or special trouble that would involve operator on the mud bill. Contractor supplies derrick, substructure, fuel, and water. Both steam and power rigs are used and local gas supply is available.

Drilling conditions.—Formations are mostly "old time gumbo shale," sticky with hard streaks of sand and lime. Most contractors take twice as long to drill first well or two as subsequent wells. At about 1,200 ft. a heavy artesian water flow is encountered; from 3,600 ft. on down shale is particularly "sticky," interspersed with hard streaks of lime. Mud is usually carried at 9.8 lb. until near bottom when it is increased to 10.2 lb., and kept at 38 seconds vis. as near as possible at all times. Weight indicator must be watched closely and care taken not to build up too thick a mud film on walls of hole. Some wells have had trouble with sticking bit coming out of hole.

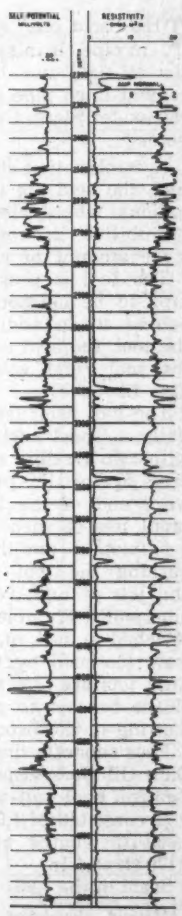
If wells are drilled too close to caprock on dome and hit caprock, circulation is lost and pipe may stick.

Average well time for experienced contractors is about 15 days (steam rig), broken down into: 2 days rigging up, 7 days drilling, 6 days running casing, waiting on cement, testing, and completing.

Companies and contractors.—A fairly large number of operators are involved because of the small tracts and divided ownership. Among them are J. M. Wren, A. W. Gregg, H. W. Snowden, Swill Oil Co., National Cooperative Refining Co., Houston Oil Co., Arkansas Fuel Oil Co., and The Texas Co. Among active drilling contractors are Peter & Curry, Ira Henderson, William Newton, and J. M. Wren.



Black arrow on map shows location of well represented by accompanying electric log



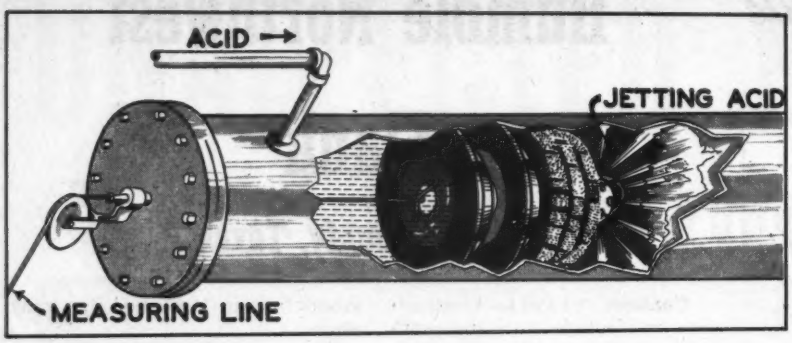


Fig. 1—(Left) Acid is used to propel the mechanical pig shown in the drawing. Hence, a combination chemical and mechanical action is produced for the cleaning of the pipe. The measuring line enables the operators to know exactly where the tool is at any time. Thus, if the tool should get stuck, recovery operations can begin at the right spot in the pipe line. Fig. 2—(Right) The "acid pig" is essentially a short section of pipe fitted with two flexible rubber cups and wire brushes. The small jets in the forward end allow a portion of the acid propelling the tool to spray against the pipe walls at a high velocity. Tiny jets are also spaced at the base of the brushes to prevent scale from matting in the brushes

"Acid Pig" Adapted to Cleaning Of Cement-Lined Pipe

by Leigh S. McCaslin, Jr.

THE "acid pig," a new development in pipe cleaning, has been adapted for oil-field use in the cleaning of cement-lined pipe at the Cement pool salt-water plant, Caddo County, Oklahoma.*

A combination chemical-mechanical tool, the acid pig is designed for situations where chemical cleaning is prohibitive in cost because of the large amount of chemicals required.

The tool is propelled through the pipe to be cleaned by acid pumped behind it. In addition to propelling the tool, the acid is used to knock off the scale and wash it ahead. (See Fig. 1.)

The tool itself (see Fig. 2) is essentially a short section of pipe fitted with two flexible rubber cups which press against the pipe walls. The forward end of the tool is fitted with small jets of such diameter that approximately one-third of the fluid pushing the tool passes through it and jets at high velocity against the pipe walls. Flexible steel brushes are attached in back of the jets to remove scale loosened by the jetted solvent. Tiny jets are also spaced at the base of the brushes to prevent scale from matting in the brushes.

Four separate lines were cleaned in Ohio Oil Co.'s disposal system at the Cement pool salt-water plant. These jobs consisted of 1,957 ft. of 4-in., two 1,000-ft. lengths of 2-in. pipe, and 1,170 ft. of 4-in.

Scale in the 1,957 ft. of 4-in. cement-lined pipe was 1/32-1/4 in. thick and was mostly iron oxide with organic material present as indicated by a 33.8 per cent loss on ignition. The calculated i.d. for the cement-lined pipe was 3⅛ in., but by observation it was more nearly 3½ in., showing that the cement lining was not uniform. The 4-in. line was cut at a point near where it entered a 5-in. line which was used as the discharge end. At the other end a 2-in. riser came off at a 4-in. tee. A 4-in. bull plug was removed from the 4-in. tee and the pig inserted. A wire measuring line was attached, running through a stuffing box made from a 4 to 2-in. swedge (see Fig. 1). This wire measuring line is used to follow the forward progress of the tool and its exact location is known at all times. This saves considerable time and expense if the tool should become stuck and have to be removed by cutting the pipe. Also if an obstruction should be encountered, making it necessary to back the tool out, the exact location of the obstruction can be given to the operator so that it can be removed. The tool is backed out by applying water pressure at the outlet end of the line.

A total of 1,000 gal. of solvent was used. The tool moved smoothly under a pressure of 30 psi. to a distance of 1,812 ft. where it slowed down and moved forward in spurts due to scale piling up in front of it. The pressure built up to 75 psi. and then fell back to 40 psi. as the tool came to the end of the 1,957 ft. A total of 15 minutes was required for the tool to traverse the total distance. At 1,638 ft., 1,000 gal. of acid had been used. At this point water was used to propel it the remaining 319 ft. Excellent results were obtained by the job. Before cleaning, the line handled only 40 per cent of the water produced by four wells. After cleaning, it handled 100 per cent.

On the other three Ohio Oil Co. jobs the scale was ⅛-¼ in. thick. No difficulties were encountered in cleaning the two 1,000-ft. lengths of 2-in. pipe, with one job being completed in 2 hours and the other in 2½ hours. However, on the 4-in. pipe the tool became stuck and the complete job took 6 hours. It was necessary to cut into the line to free the tool. The location of the stuck tool was shown by the measuring line to be 506 ft. from the inlet and this position was verified to the foot when the pipe was cut. Also of interest is the fact that no loose scale was piled ahead of the tool. This indicated that the jet action of the acid was very efficient in keeping the scale washed ahead of the tool.

*Method developed by Dowell Incorporated, Tulsa.

New Riverboat Begins Service on Mississippi

HOUSTON.—A new riverboat which will move six 9,000-bbl. oil barges in Mississippi River service was placed in operation this week by Charles C. Smith Corp., Houston.

Christening of the vessel here June 6 was indicative of the continual post-war expansion being made in the nation's facilities for inland-waterway oil transportation.

The 100 by 22 by 8-ft. Jane Smith, powered by a 1,600-hp. General Motors diesel engine, was built by Smith Marine Corp., Houston. After christening, the vessel proceeded to New Orleans with her initial tow of 54,000-bbl. of oil cargo.

Fundamentals of

PIPE-LINE DESIGN

by Benjamin Miller*

THIS is the first of a number of short articles dealing step by step with the factors involved in pipe-line design. A concluding discussion will appear in the Journal's Annual Pipe Line Number to be issued this fall. The author, located at 114-55 118th Street, Ozone Park, N. Y., and engaged in consulting practice in the pipe line field, previously for 16 years was with the Henry L. Doherty-Cities Service Co. organization. He has worked on a wide variety of technical and economic problems in oil and gas production, transportation and marketing; was graduated from Columbia College in 1924, with graduate work at Columbia University's School of Engineering, and receiving the degree of chemical engineering in 1926.

THE design of pipe lines to move crude oil, gasoline, and other refined liquid-hydrocarbon products, and fuel gas is largely empirical; that is, it is based on experience. Design is added, however, by the application of mathematical analysis to correlate the facts in the light of accepted physical principles, and thus becomes an art based on science. Since our knowledge of the materials and forces which must be dealt with in pipe-line design is not complete, nor likely ever to be, completely rational procedure is not possible; yet much can be done with what we have, and it is unfortunately true that in many respects current pipe-line design practice does not take full advantage of the pertinent knowledge now available, while the lag between the disclosure of new scientific and technological concepts and data and their application in practice is much greater in the pipe-line division than in the refinery division of the industry.

In the paragraphs which follow the attempt will be made to point out that facts and ideas which are fundamental to pipe-line design and to show how they are or may be applied; to suggest ways in which new facts and ideas may lead to further progress; and to develop methods of dealing with pipe-line design problems and illustrate them by examples.

Pressures in a Simple Oil Pipe-Line System

We may well start by considering a simple oil pipe-line system consisting of a large number of pumping stations connected by pipe-line sections. Part of such a system is indicated diagrammatically in Fig. 1. The flow of oil is from left to right, from a station not shown to station "ef," thence to station "gh," to station "ij," and from the latter to the next station, which is not shown. The intake of station "ef" is indicated by e, and the discharge by f, and similarly for stations "gh" and "ij."

For simplicity it is assumed that the pipe line is horizontal, that each section is the same length as every other section and that they are constructed with pipe of a single diameter and wall thickness, that the pumping stations are identical, that the temperature is the same at all points, that the compressibility of the oil is extremely small, that oil of one kind only is in the line, and that it is flowing at a constant rate. These assumptions are not so far from the actual conditions which exist in many pipe-line systems as to make them impractical.

The pressures in the system of Fig. 1 are shown in Fig. 2, where they are plotted so as to show how they vary with distance from the beginning of the line. The pressure decreases continuously to a minimum value at e, then it increases because of the action of the pump to a maximum at f, decreases again to a minimum at g, and so forth.

The lines of decreasing pressure, such as from f to g, are straight, which means that each unit length of pipe line consumes the same number of units of pressure as every other unit length. This can also be expressed by saying that the pressure gradient is constant under the assumed conditions. The pressure gradient may be stated in pounds per square inch per mile, or in other convenient units.

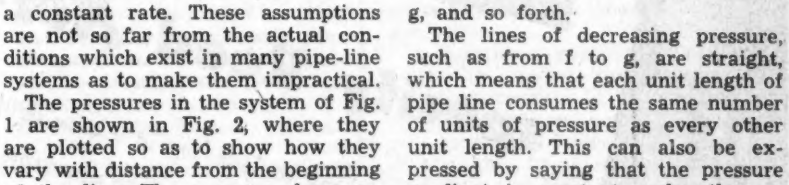


Fig. 1—Part of a simple oil pipe-line system

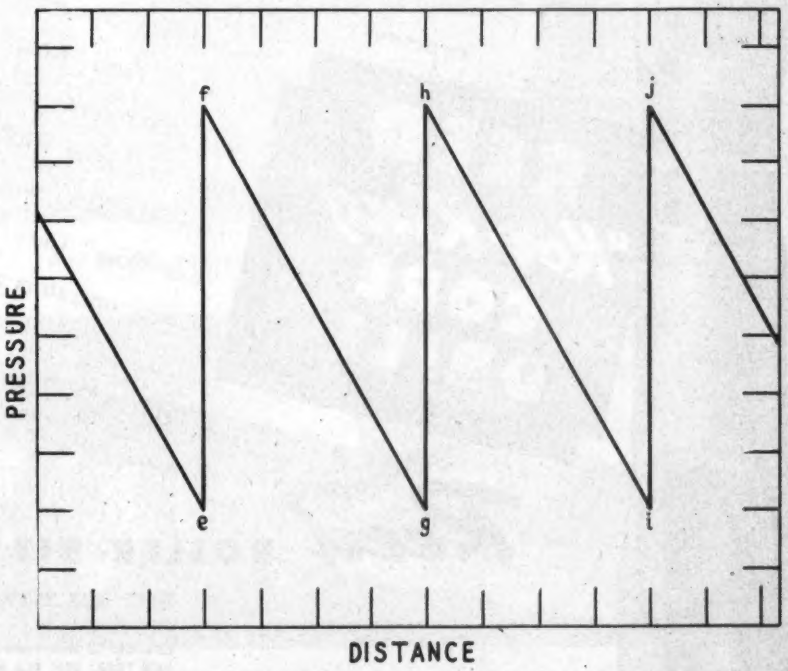
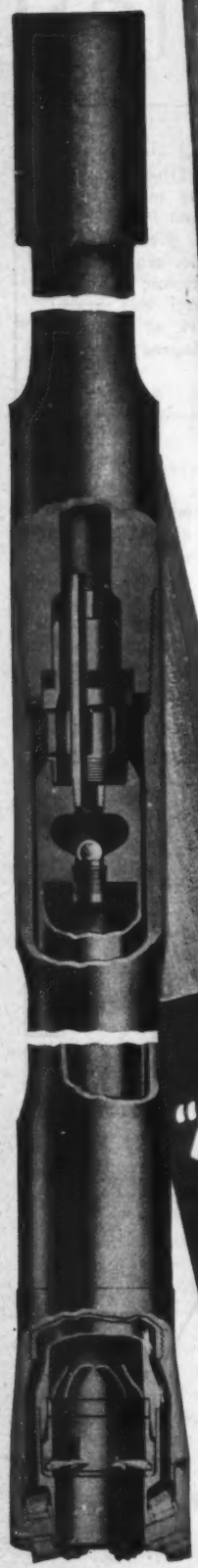


Fig. 2—Pressure-distance relation in system of Fig. 1

*Consulting engineer, Ozone Park, N. Y.



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Flying Squadron

ATLANTIC REFINING'S SOLUTION TO PEAK LOADS

by H. T. Yeager

The author was employed by Atlantic Refining Co. in 1933. He was selected as a candidate for the flying squadron 6 months later. He served as lieutenant j.g. in the Navy from 1942 to 1946 and upon his return with the company was selected to head up the training of the flying squadron, succeeding H. A. Schaffer, who is now retired.

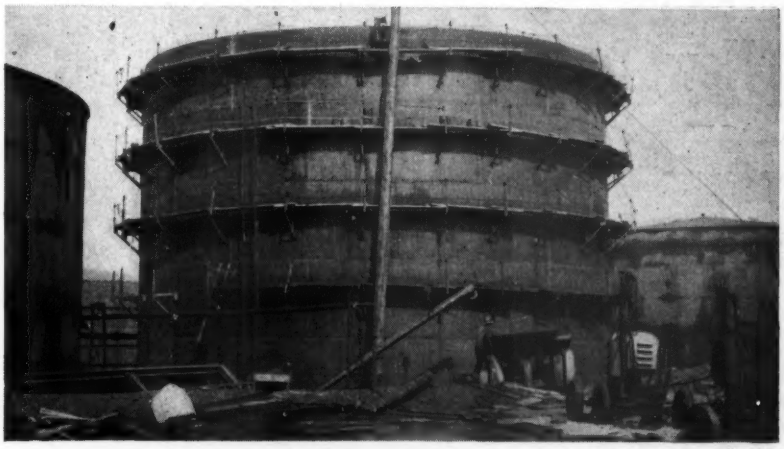
INCREASED specialization is the natural outgrowth of progressive development of man's knowledge. No longer do we go to see the "doctor" for a cure to our more serious ailments. We are sent to a heart specialist, the surgeon, the obstetrician, or one of the other specialists in the medical field. Scientists are classified as physicists, metallurgists, chemists, oiologists, etc., according to their specialty. Similarly, mechanics are classified as pipe fitters, boilermakers, welders, carpenters, riggers, and the like.

Such specialization has decided advantages toward promotion of efficiency and accuracy in the porformance of all kinds of work. Complicated work can be performed effectively by teaming together a group of specialists in the particular field. On the other hand, a number of problems, both for the producer and the consumer, are developed by such specialization. As individuals we are faced with the problem of determining our field of specialization and our method of training in this field. As consumers or employers we are faced with the problem of meeting fluctuating demands for various special types of work with a fixed number of specialists. Thus it becomes necessary in each field to have a certain number of people trained in more than one specialty so that peak demands for particular types of work can be met.

Problems of this nature have developed in the field of refinery maintenance and recognition of this problem in The Atlantic Refining Co. has resulted in an organization called the "flying squadron." This organization has three purposes:

1. On-the-job training in more than one specialty in the field of refinery maintenance.
2. Meeting peak demands for various crafts in the maintenance organization.
3. Vocational guidance.

At the present time the flying squadron consists of 60 men being trained as refinery boilermakers, riggers, and pipe fitters. This group is divided into two classes of 30 men. Each class is divided into three groups



A 60 by 40-ft. all-welded storage tank being erected by the Flying Squadron

Blueprint instruction in pipefitting

The riggers group "booming" a model rig

with each group assigned an instructor. It is planned that the classes will devote 4 years to the squadron. Each of the first 3 years are devoted to one of three crafts and the fourth year is spent in becoming familiar with layout and planning work for all three crafts and in leading and directing men. Included in the first year of training is tack welding and burning in addition to one of the crafts outlined above.

Applicants for the school are selected by a committee of top supervision in mechanical and personnel divisions from employés of the company between the ages of 18 and 30. They are required to have a certificate of high-school graduation and, in addition, it is considered desirable for each applicant to take evening-school courses in structural or mechanical engineering at an accredited evening school. At present all squadron members are attending night school. In addition to the evening school classroom work, approximately 10 per cent of squadron's working time is devoted to classroom instruction and another 5 per cent to field instruction in the refinery. The remainder of the time is spent "on the job" with their instructors serving as their foreman. The instructors are all graduates of the flying squadron whose sole assignment is the training of their particular group. The head of the flying squadron reports directly to the assistant superintendent of the mechanical department.

Instruction manuals for each craft have been prepared by the instructors. The manuals are supplemented with slides and photographs, demonstrations, and models. Refinery engineers and functional foremen are frequently enlisted to lecture on specific subjects.

Practical field training is carried out on all types of equipment in the refinery. Instruction and training in pipe fitting include the installation of threaded and welded pipe, or copper tubing, and of bell and spigot pipe. Various phases of pipe fitting including sketching, field layout, pipe design, beveling of pipe by burning, and special techniques peculiar to refinery stills and cracking units are taught. Instruction in boilermaking includes replacing furnace tubes, repairing and replacing tower trays, repairing and erecting riveted and welded storage tanks, complete with stairways, platforms, etc., installation and repair of corrugated-metal roofs, pipe supports, etc. The phases of work covered in the boilermaking craft include preparation of sketch and layouts, minor design work and the operation of tools. Riggers' instruction includes erection and use of all rigging gear, operation of pneumatic hoists and steam winches, steeplejack work, knots and splicing, jacking and cribbing, moving and dismantling of refinery equipment, buildings and tanks. The phases of this work include stress and lift calculations and knowledge of safe loads for all material used.

No small part of the squadron's training are the principles and practices of safety as developed specifically for maintenance in a petroleum refinery. The safety record of this group is over 125,000 man-hours without a lost-time accident. Considering the fact that the majority of the men are relatively new to the petroleum industry, this is considered to be a good record. A safety-code book incorporating the safety regulations covering all three crafts has been prepared for the squadron's use.

Since the flying squadron has been in existence it has "graduated" 135 men, 60 of whom have advanced to supervisory positions in various departments of Atlantic's organization. Atlantic believes that such training more than pays off in meeting the problem created in our age of specialization.

New Type of Roofing Replaces Rusted Tank Tops

ATTACKED on the inside by hydrogen-sulfide fumes combined with moist air, metal-plate tank roofs last only from 6 to 8 years in the tropical Gulf Coast area. At the end of about 6 years it is necessary to reroof petroleum-storage tanks—a costly and time-consuming job. The problem in this case applied to not less than fifty 55,000-bbl. tanks. When confronted with this problem, Petroleos Mexicanos experimented for over a year with different types of roofing materials, with the objective of licking the corrosion problem. Other features required of the roofing were: (1) it had to be rugged enough to support workmen, (2) it had to be no heavier than ⅜-in. steel plate, and (3) it had to be elastic enough to withstanding excessive expansion and contraction caused by tropical sun and frequent showers.

The most economical roofing developed was one of a mineral wool cement base. It is poured in place to a 2-in. thickness. The reinforcing shown is 12-gage wire mesh. The finished roof has sufficient beam-strength to support any normally encountered weight or shock, is light in weight, waterproof, lightningproof, and elastic enough to withstand expansion and contraction conditions. The new roof can be expected to outlive metal roofing by at least four times and costs no more. A major advantage stems from the insulating qualities of the new roofing material; these insure maintenance of more uniform temperature inside the tank and thus reduce to a minimum, losses by evaporation, wind drift, and breathing, of the more volatile fractions of stored crude oil.

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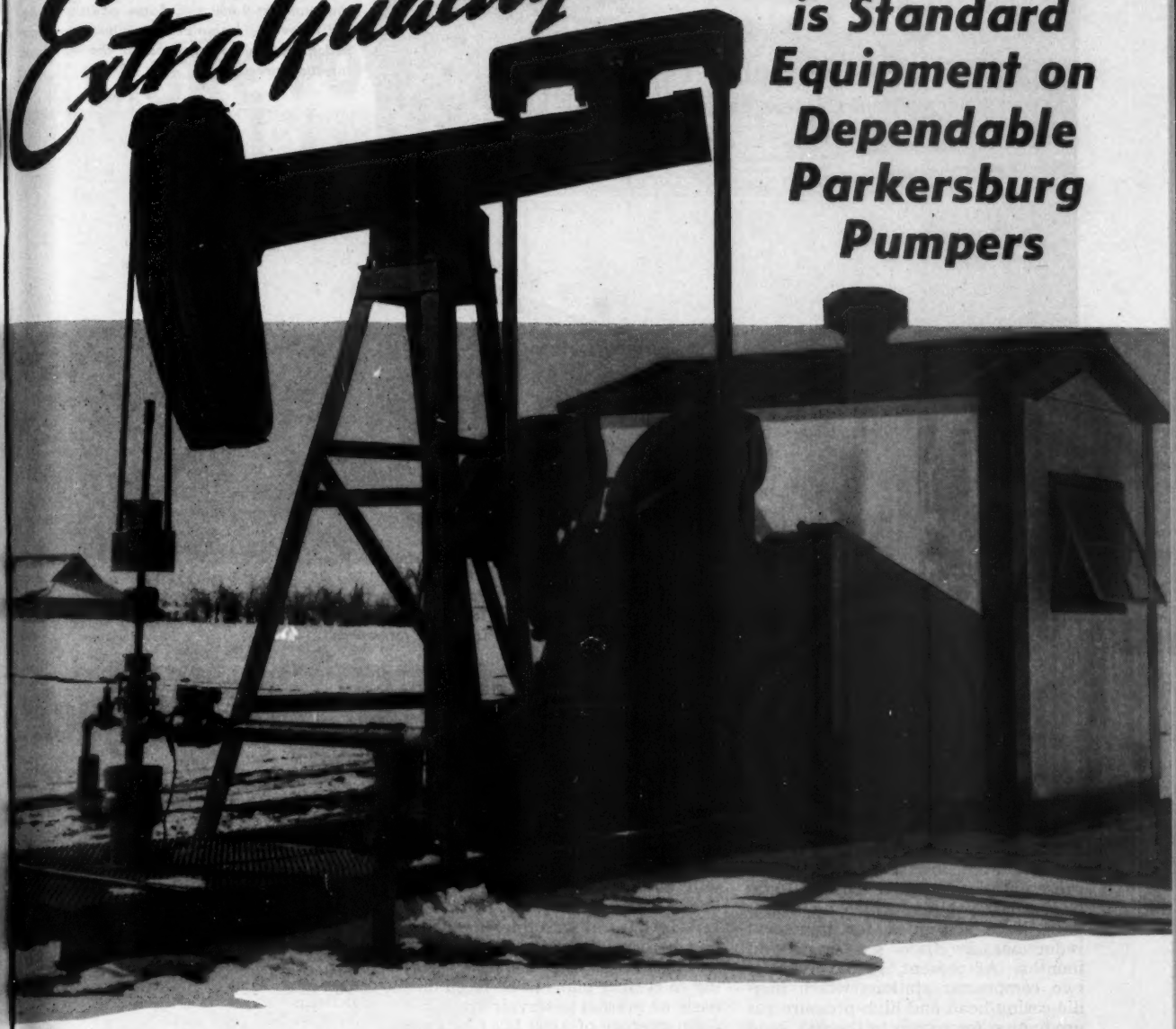

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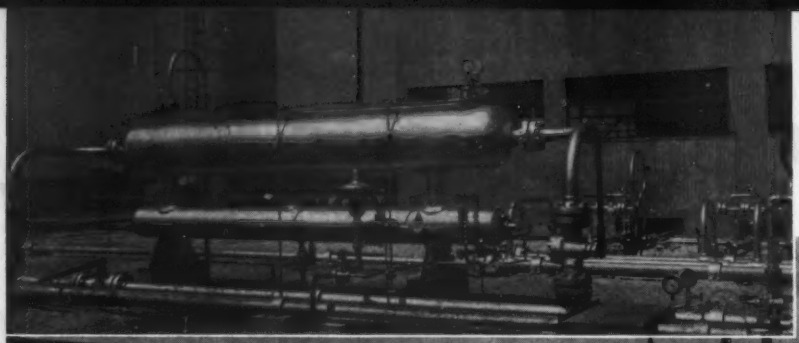
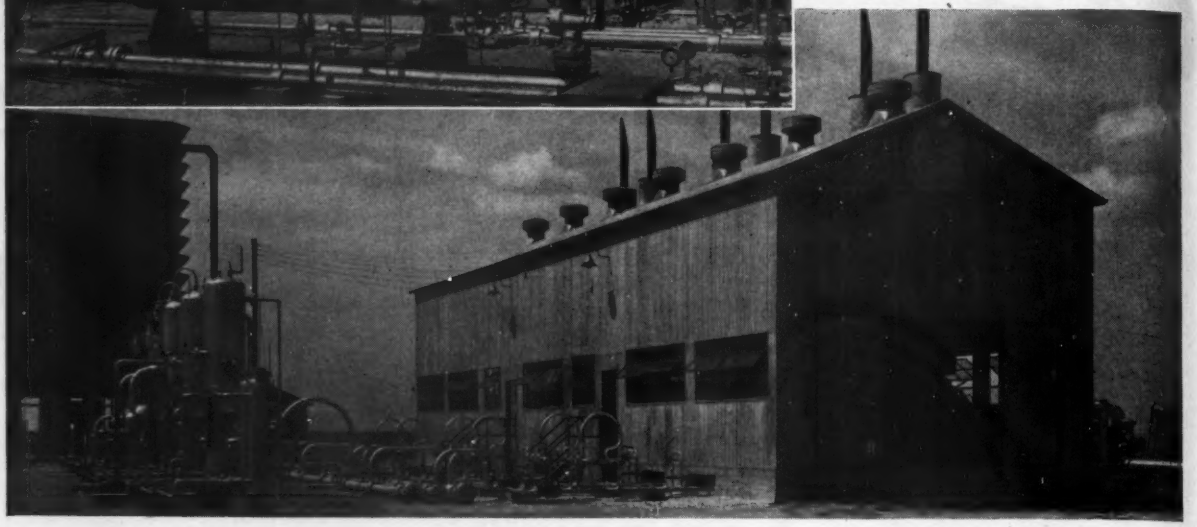


Left: This horizontal separator knocks out water and liquid condensate from the incoming high-pressure gas stream, entering the plant at 1,800 psi. Some additional liquid recovery is obtained by interstage separation during compression to the 3,100-psi. injection pressure



The compressor building houses three 600-hp. units. Casing-head gas and vapors from the first stage separation of condensate are compressed from 500 to 1,400 psi., and all gas including incoming production from condensate wells is handled in the second stage, from 1,400 to 3,100 psi., for injection to producing formations

Agua Dulce Pressure-Maintenance Project

by George Weber

PLOMO CO.'s pressure-maintenance installation in Agua Dulce field is representative of the small Texas Gulf Coast projects which, in aggregate, have accounted for important reductions in flare gas in recent months. At present, Plomo operates two compressor stations which handle casing-head and high-pressure gas production for return to the five sand formations producing oil and condensate under a 5,600-acre lease operated by Puenticitas Oil Co. in the south sector of Agua Dulce.

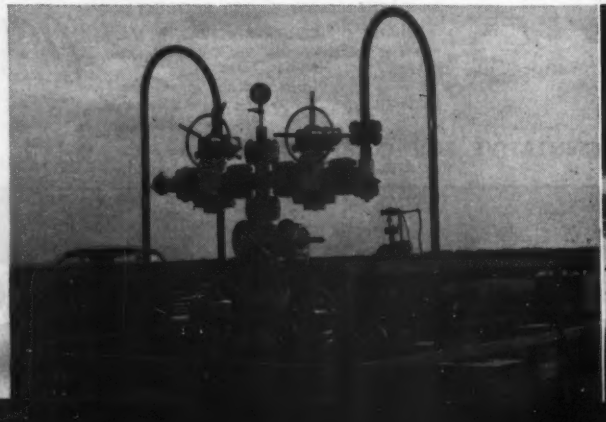
These two Plomo plants, installed to comply with Texas Railroad Commission rulings on gas conservation, will be incorporated eventually into one system. The system will extract L.P.G., natural gasoline, motor fuel, and kerosine from incoming gas, and maintain reservoir pressures according to cycling plans to be fixed on the basis of present reservoir studies.

An average of 3,000 M.c.f. of casing-head gas formerly flared is now fully utilized, and gas-condensate wells which were previously shut in, now produce an average of 10,000 M.c.f. daily in a pressure-maintenance program. At the present time, the following wells are completed on the company's Simmonds and Perry "B" lease:

Sand—	No. wells—Oil	Gas
Perry	10	3
Simmonds	19	5
6,600-ft.	..	2
Bertram	..	1
Wardner "B"	7	1

These include eight dual completions in the Perry and Simmonds sands. Certain gas wells are now being used as injection wells and the final cycling plan will probably employ ex-

Left: Several wells on the lease are dually completed. Existing wells will be used for injection when the final pressure-maintenance plans are determined. This well is for injection into Simmonds sand. Right: This temporary compressor unit compresses casing-head gas produced from the Wardner "B" sand, for direct reinjection to the formation. It consists of a 150-hp. packaged unit. This gas will eventually be processed in main plant. Casing-head gas from the 36 oil wells on lease is relatively lean, containing little pentane or heavier



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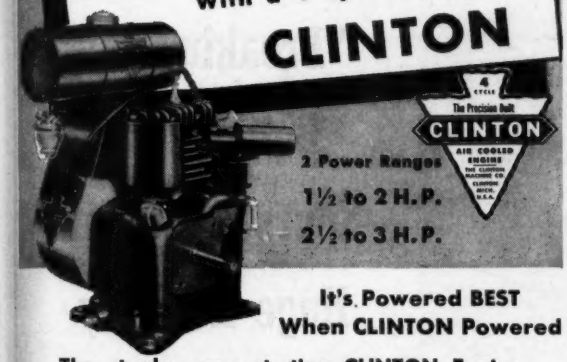

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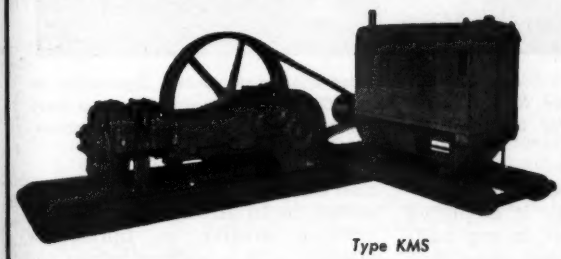

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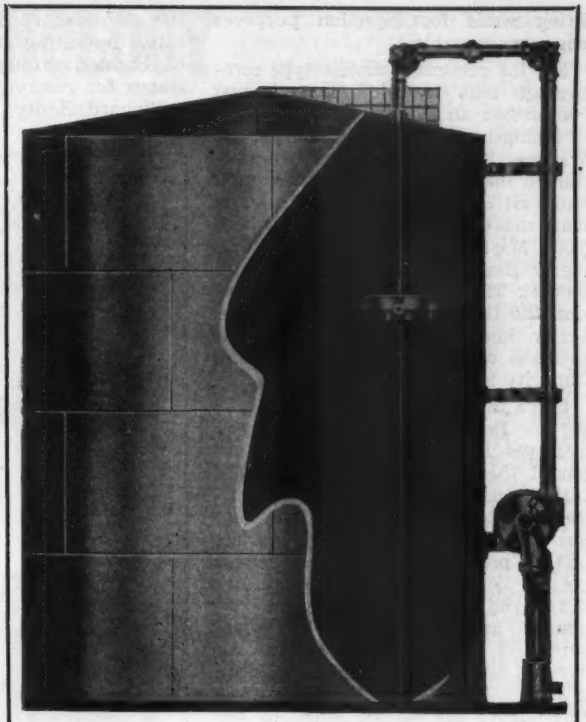

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isting wells for injection purposes wherever possible.

For the present, a mobile-type compressor unit installed last August compresses an average of 1,500 M.c.f. of casing-head gas produced from the Wardner "B" sand, for direct reinjection to that reservoir. Gas production from all other sands underlying the lease moves to main plant site where 3,000 M.c.f. of casing-head gas, formerly flared, is compressed for injection. This plant, placed in operation the first of this year, will eventually handle extraction and compression of all lease gas production. Capacity is 35,000 M.c.f. daily.

Since the gas-oil ratio for oil wells in the Perry and Simmonds sands averages less than 1,000 cu. ft. per barrel, the bulk of gas moving to the plant consists of high-pressure production from gas wells. Condensate gas enters the plant at an average of 1,800 psi. and 110° F. It first passes cooling coils where the temperature is reduced to 80° F. Water and condensate are separated at this pressure and additional condensate recovered as pressure is further reduced to 1,400 psi. The gas at the latter pressure enters the second stage of the two-stage compressor section for return to the formations at 3,100 psi.

Comparatively little liquid separates from high-pressure gas at the plant. Entrained liquids from separators, plus a small fraction obtained by further retrograde condensation, are withdrawn from the 1,400-psi. separator, and flashed in two stages to 500 and 115 psi., and run to stock tanks. Gas recovered overhead at 500 psi. is scrubbed and commingled with incoming casing-head gas, passing to the suction header for single-stage compression to 1,400 psi. where it joins the principal high-pressure gas stream for final compression to injection pressure. Vapor separated from the condensate at 115 psi. furnishes fuel for the compressors.

Construction of extraction facilities will begin this summer and full operation of the complete plant is expected by early 1949. Recoveries of 35-40 per cent of propane and 90-95 per cent of butanes are expected.

On the basis of a daily gas throughput of 35,000 M.c.f. of gas, daily plant production will average 16,000 gal. of L.P.G., 33,000 gal. of 18-lb. natural gasoline, and 1,800 gal. of kerosine. The plant will also allow production of 10,000 gal. of motor fuel, together with 27,000 gal. of natural. The compressor plant, under present operating schedules, recovers a total of about 0.8 gal. per M.c.f. in plant scrubbers and interstage separators. Based on reserve estimates for all sands underlying the lease, an economic operating life of 15 years is expected for the plant, assuming a daily throughput of 35,000 M.c.f. of gas.

The company is at the present time installing an additional 400 hp. for the gathering of flare gas from separators operating at 100 psi. This will be boosted through three additional stages for reservoir injection.

Richard Henry, of Dallas, was retained as consulting engineer on the installation, and construction was done by company labor under supervision of Harry K. Dixon, who is superintendent of the plant.

"Breaking the Bottleneck" Spurs Action in Huge Refinery

Above—The "bottleneck award" is an unwanted conferment to any department in Esso Standard's Bayway, N. J., refinery. Below: One job of the periodic group meetings is to eliminate any bottleneck jams that come up in construction or maintenance operations

A GREAT deal of practical applied psychology is employed by good management in any business, nowhere in better stead than in a refinery operating and engineering organization. To illustrate an amusing method for speeding up work in a complicated series of operations, Esso Standard's J. R. Eiffe, general superintendent at the Bayway refinery, uses the method described here.

In construction, operation, and maintenance of a refinery various individual jobs frequently slow down progress by holding up other jobs which are interdependent. Periodic meetings of staff supervisors, regional engineers, and other responsible men are held, at which progress on various jobs is reported. When it is found that one job is "holding up the works" the man responsible for that job is presented, in an atmosphere of either extreme gravity or uproarious hilarity, with a segment of an ordinary 4-oz. sample bottle, cut off at an angle and mounted on a polished wood block with the neck of the bottle painted a vivid red.

The entire group represented by this man then has the onus of delaying the work, and it is up to them to "break the bottleneck" at the earliest possible moment. As soon as the work has been completed the offensive bottleneck is returned gleefully to the superintendent and that group is "out of the doghouse" in the organization.

Typical of good management is the operations board shown in the superintendent's office, which shows the status of each job being carried out.

QUESTIONS on TECHNOLOGY

by W. L. Nelson

Consulting Engineer

Gas Cracking for Butadiene

Simplified Flow Diagrams

During World War II there was talk of making butadiene by thermal cracking of petroleum naphtha, yet we have never noted any descriptions of such a process. Can you direct us to such material?—R. E. F.

Little is available about thermal cracking for the production of butadiene. The flow diagram shown on this page was taken from "Equipment Protection for Cracking Units" by E. Q. Camp (The Oil and Gas Journal, November 29, 1947, p. 83) and it is typical of at least three units that were installed. In all, five cracking plants were installed (H. D. Ralph, Petroleum to Supply All Butadiene Next Year, The Oil and Gas Journal, December 15, 1945, p. 70). A plant entirely different from the one shown on this page is described by H. L. Masser (The Oil and Gas Journal, October 28, 1943, p. 45). Finally, much butadiene was made from petroleum by the catalytic dehydrogenation of butene.

The amount of butadiene produced by thermal decomposition is a function of the cracking temperature somewhat as follows:

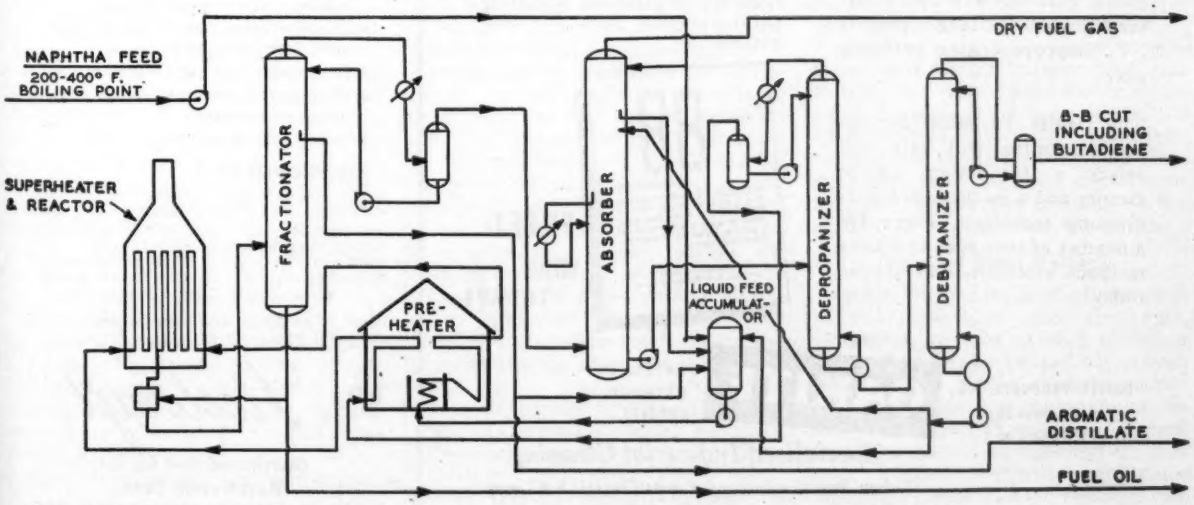
Cracking temp., °F.	Yield of butadiene, per cent
1,000	0.4
1,080	1.06
1,160	1.73
1,240	2.4
1,320	3.07
1,400	3.75
1,740	6.6

The other materials produced when feeding a naphtha or heavier stock are large amounts of gases such as methane, ethane, ethylene, propane, propylene, butanes, butylenes, as well as vapor-phase or aromatic gasoline or distillate and cracked fuel oil. Thus, butadiene is definitely a by-product and the thermal method cannot be contemplated unless there is a large outlet for the other products than butadiene. The temperatures listed above are higher than the critical temperatures of the hydrocarbons involved, and hence the cracking takes place in the vapor phase. It is generally similar to all vapor-phase high-temperature operations in that (1) the gases (propane and lighter) and any liquid charge stocks are preheated or vaporized in separate coils or furnaces, (2) the reaction is conducted in separate high-temperature coils or furnaces where the rate of heat input can be carefully controlled, and (3) the products are quickly cooled in a so-called arrester by means of a "quench" stock.

The absorber operation shown in the diagram is somewhat unused. The outgoing gas is last contacted with the incoming fresh naphtha charge stock. Such a stock is entirely free from butane hydrocarbons (or possibly free from pentanes or hexanes) and hence the recovery of butanes from the outgoing fuel gas is effective. Lower in the absorption tower, the gases from the cracking process are contacted with a recycling stream of pentane-and-heavier hydrocarbons.

Naphtha of a boiling range of 200°-400° F. is the primary feed stock. It is heated and cracked in the vapor phase along with recycle stocks from several points in the system and in addition a propane-and-lighter gaseous stock produced in the operation is heated and cracked in separate coils. The products of the propane (or propylene) decomposition are lower boiling than propane (primarily ethylene and methane) and hence the over-all reaction must involve polymerization or alkylation as well as decomposition. The reaction pressure is low.

When handling 2,000 bbl. per day of naphtha about 400 bbl. per day is used through the absorbers. In addition, the furnace charge contains about 400 bbl. per day of aromatic distillate and about 750 bbl. per day of debutanizer bottoms (Camp, Phillips, and Gross, Corrosion of 18-8 Alloy Furnace Tubes in High-Temperature Vapor-Phase Cracking Service, Corrosion Vol. I, No. 2, September 1945 of N.A.C.E.) The combined feed is charged to a preheater operated with an outlet temperature of approximately 950° F. The charge is then heated in two parallel superheaters to a temperature of approximately 1,325° F. which is slightly below the optimum temperature for the reaction. The vaporized naphtha is mixed with the depropanizer overhead (recycle gas) that is heated in a separate section of the furnaces to a temperature of about 1,440° F. The resulting mixture passes into a reaction zone and is quenched to 400°-450° F. with bottoms from the fractionator. Each superheater is equipped with a so-called "reactor." The capacity of each reactor is only 3.6 cu. ft. and the residence time is very short, being in the order of 0.034 second. This reaction period is the time that elapses between the mixing of the fresh and recycle streams at the outlet of the superheater furnace coil and the quenching of this combined stream with bottoms from the fractionator.



Simplified flow diagram—raw butadiene by thermal vapor-phase cracking

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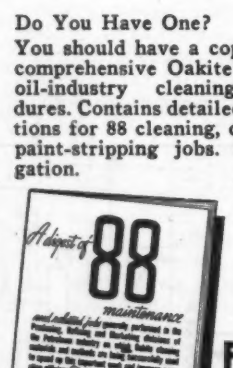

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Recent Developments in Paints for the Petroleum Industry

*by G. W. Oxley**

THE basic purpose of all paints is two-fold: to apply a protective coating on the surface or structure, and to provide a decorative effect.

Although painting has been used extensively only during the last century, the art of mixing and applying paints is several thousand years old. The white lead paints were known to the Romans 2,000 years ago. The wide variety of protective finishes now manufactured, however, permit a choice for practically every desired purpose.

This article deals not only with the more recent developments in paints but it also treats with preparation of surfaces, priming, final applications and many specific paint problems—hence it will be of interest to all divisions of the industry—drilling, production, refining, natural gas-gasoline plants, and transportation.

PAINTS for the petroleum industry involve an annual expenditure of more than a million dollars. They are used in every phase of the industry for the protection and decoration of many million dollars' worth of equipment. Considering the annual losses due to corrosion, it is important that wherever practicable the surfaces be protected by the use of some suitable paint. For new construction and maintenance, only the best available paints should be used if maximum protection is to be realized.

The relative merits of old and new paints are continually being checked by comparative laboratory tests and by field experience under actual service conditions. For more than 25 years Standard Oil Development Co. has cooperated with the various company interests in weeding out the unsuitable and unnecessary paints and selecting those which will be the most economical in the long run. This paper is intended to review a number of painting practices and problems, most of which are concerned with corrosion prevention.

Selection of suitable paints is based not only on their properties for protection against corrosion and for decoration, but also on many other requirements. Among these are heat reflection to reduce evaporation losses, light reflection to facilitate good visibility and best lighting effects, fume resistance, and water or dampproofing to prevent penetration of moisture or corrosive impurities. Some uses of paint involve merit for sanitation, cleanliness, or advertising value. Some requirements necessitate resistance to atmospheric conditions, acids, alkali, gasoline, oils, solvents, water, abrasion, mildew, heat, or flame. In some cases, paints are used for identification, prevention of contamination by iron, for luminous properties, for repelling insects, or as antifouling paints to reduce fouling by marine organisms.

Many petroleum products are being satisfactorily used in paints. There are many outstanding uses of asphalts, solvents, resins, waxes, rust preventives, synthetic rubber, carbon, and other petroleum products for painting requirements.

New developments in resins, pigments, oils, and thinners have led to improvements particularly for conditions where quicker drying and better resistance to liquids have been required. It must be recognized that paints in general have limitations in regard to resistance to elevated temperatures, freedom from porosity, or resistance to certain liquids. No amount of wishful thinking will make paints suitable for some of the more severe conditions requiring substantial linings for adequate and more permanent protection. However, there are many well-established painting practices.

Preparation of Surfaces

It must be fully recognized that, before the application of any paint, the surfaces should be properly prepared so they will be clean, dry, and free from any impurities detrimental to the paint. Frequently this is not given the proper attention and, as a result, more costly cleaning is necessary in repainting. If time will permit, new steel should be weathered to remove mill scale. Cleaning of equipment may be accomplished by sand blasting, scraping, chipping, flame descaling, or pickling. At the present time, a study is being made of electrolytic descaling of surfaces in contact with sea water.

Sand or grit blasting is recognized as the best method of surface preparation. To eliminate the dust and silicosis hazard in sand blasting, vacuum equipment is available and wet or vapor blasting methods with rust inhibitors have been developed.

Phosphoric acid pickling and priming at the mill and some phosphoric passivating washes have been tried out. The phosphoric treatment must be followed within a few hours by the paint primer. For many purposes, their additional cost has not appeared to be justified. They do have merit in shop painting of curb pumps, oil-burning equipment, steel sash, refrigerators, and other similar equipment. Phosphoric washes and wash primers are used in the Navy on the bottoms of ships after wet sand blasting.

Flame cleaning or descaling is one of the newer methods which has merit particularly for waterfront or damp locations where there is no safety hazard due to explosive vapors. It requires subsequent scraping and wire brushing, but leaves the surface in a warm, dry condition favorable for good paint adhesion.

Mechanical rotary or manual wire brushing after scraping is by far the least expensive method of cleaning. After about 6 months' weathering and loosening of the remaining mill scale by application of a distillate oil, effective cleaning can be accomplished by this method on outdoor surfaces.

For galvanized iron, instead of the old-type etching treatments, successful results are obtained by removing oil or grease with a naphtha solvent and applying a zinc dust primer.

Alkaline concrete or plaster surfaces must be neutralized with zinc sulfate or weak acid to prevent saponification of oil-base paints. On all absorptive surfaces, a primer sealer must be applied. Asphalt or bituminous surfaces require a special sealing paint to prevent bleeding of the asphalt or coal tar into the finish.

Priming Steel Surfaces

Of the various types of primer such as red lead, blue lead, zinc dust, chromates, iron oxide, and others, a red-lead-and-oxide primer has proven to be a good general-purpose primer for steel. This has been shown in service tests and experiences for more than 20 years under different finishes and various climatic conditions. About 25 years ago, it replaced the old-type graphite-and-carbon-black,

*Esso Engineering Department, Standard Oil Development Co., Elizabeth, N. J.

linseed-oil primers which sometimes stimulated corrosion and deep pitting in the presence of salt moisture, acidic condensate, or other electrolyte. The red-lead-and-oxide primer with a minimum of 50 per cent red lead in the pigment has rust-inhibitive properties as well as outstanding, brushing, drying, and adhesion.

In more corrosive locations such as warm seacoast areas, it is considered good practice to supply two priming coats to reduce cost of cleaning in repainting. Two different-colored primerers have been used to assure complete coverage by each coat.

Zinc-chromate primers complying with federal specifications are recognized as having excellent rust-inhibitive properties. Although both the slow and fast-dry types are being investigated, they have not proven to be superior to the red-lead-and-oxide primer in durability. Zinc-chromate primers have more water-soluble constituents than the red lead and may give a thinner, less durable film.

For sea-water or marine atmospheres, on barges, tankers, or other equipment requiring a quick-drying, tough-coating, a zinc-chromate-and-iron-oxide bakelite primer can be used to advantage. Other alternates are the alkyd red-lead primers or a red-lead-and-oxide primer with the addition of 1 lb. of litharge to each gallon. For contact with water, at lease two coats of such a primer should be applied.

For one-coat protection of steel during storage, iron-oxide paints have shown the best durability. These paints may be used for both priming and finishing.

Tank-Finishing Paints

The earlier gray finishes for tanks were subject to chalking failures and usually required repainting in less than 6 years. More than 20 years ago, aluminum paints were introduced and proved to be superior in durability and appearance when properly applied over a good primer. They showed very good resistance to chalking and fumes and in many cases good protection for 10 to 15 years without repainting. Present-day paste-aluminum paints surpass the earlier coarser, powder-aluminum paints. They have been used extensively for bulk-station tanks and light gravity refinery tanks.

For roofs of tanks containing light gravity products subject to evaporation losses, white paints which stay white will keep the vapor space as much as 9° F. cooler than an aluminum-painted roof. The first tank-top white paints were too rapid in chalking. White wash over a sand embedded in a heavy paint underneath to increase solar heat reflection lacked durability. The present practice is to use a more-durable product, an alkyd, titanium oxide, fumeproof white finish. This paint should be applied in two coats over a suitable primer and may be used with an aluminum intermediate coat to improve durability.

To make soiling less conspicuous and to serve as a low-cost finish, black-graphite finishes for the bottom rings of tanks have given excellent protection along with a waterproofing of fibrated asphalt for about 12 in. at the base. To prevent discoloration by a sulfurous atmosphere, finishing paints used in refineries must be free from lead compounds.

A special type of protection has been used for gas-holder lifts. Automatic painting with black oil has given good protection as the lift raises up and down through the cup of oil. This was recognized as a good practice more than 10 years ago in locations where the appearance is not objectionable.

Underside of Tank Bottoms

Where corrosive conditions exist, heavy applications of cut-back steam-distilled asphalt have given good protection. Considering reports of corrosion and leakage, adequate coatings should be applied, as placing tanks on oil-soaked sand does not always prevent corrosion. If bottoms have not been adequately protected as in welded construction, cathodic protection has been used where corrosive conditions exist.

Underground Tanks

The exterior surfaces of steel underground tanks may be protected by a heavy asphalt coating over an inhibitive primer. In salt-water locations as at Atlantic City, where leaks due to corrosion were experienced in as short a time as 4 years, sacrificial magnesium anodes are being tried out to supplement the protection by the coatings.

Interior of Tanks

Although some progress has been made, protection inside tanks continues to be in an experimental stage. Service tests are under way in sour-stock tankage, gasoline tanks in salt atmospheres, tank trucks, tank cars, and miscellaneous tankage where internal corrosion is experienced.

Inside the shell of floating-roof tanks in gasoline service, good protection has been obtained from two coats of a bakelite aluminum paint over two coats of a bakelite zinc chromate and iron-oxide primer.

Inside aviation-gasoline truck tanks, two coats of pigmented shellac-base paint have given good protection for about 2 years and have kept rust out of meters. Three coats of pigmented latex-vinyl paint have shown greater durability at a higher cost which may be justified in locations where internal corrosion is experienced.

During the past few years various manufacturers have proposed the use of vinyl paints for protection inside tanks handling sour stocks, gasoline, or other petroleum products where corrosion is being experienced. To assure a good bond, sand or grit blasting is necessary. There are a number of air-drying vinyl copolymer and other vinyl plastic paints for protection against corrosion for temperatures up to about 150° F. Some are claimed to have given 2 to 3 years' complete protection inside sour-stock receiving tanks. Because of low nonvolatile content, they require about four to six double coats with a minimum film thickness of 0.006 in. To assure complete coverage, it is desirable to alternate the color of each successive coat.

For inside sour-stock equipment, vinyl paints show some promise but may be less satisfactory than gunite. Oil-resistant coal-tar paints are also being considered for such service. Various types are available including those for hot application, some fibrated, and others emulsified. All require heavy application to assure best results.

Phenolic paints, air dried or, even better, heat hardened if baking facilities are available, also have merit as interior tank coatings.

Heat-Hardened Phenolic Coatings

Heat-hardened bakelite and other phenolic coatings have shown good resistance to sea water, gasoline, solvents, acids, weak alkali, abrasion, impact, and temperatures up to about 300° F. Heating of smaller equipment may be done in industrial baking ovens. For heating large equipment, hot air, induction heating, or infrared lamps may be used. If practicable, equipment should be coated before shipment.

There are many suppliers of such coatings with various plasticizers and applications are made by a number of contractors, some of whom have their own coating.

These coatings have been used as substitutes for galvanizing. They have been applied for protection of aviation-gasoline drums, catalyst drums, hot-water tanks, Army canteens, chemical-warfare requirements, fan and blowers subject to acid fumes, photographic equipment, and producing field piping subject to sour-stock corrosion. They are not satisfactory to resist higher concentrations of alkali. They are more expensive than the air-drying vinyl coatings but may be more durable for some conditions where baked-on coatings are practical.

Pipe-Line Coatings

New steel pipe is generally coated at the mill with a hard-drying coating oil for protection during shipment and storage. Asphalt pipe-line enamels and primer, with or without asbestos felt or glass-fiber wrapping and kraft-paper outer covering, may

be machine applied at various mills. Such mill coating is not desirable unless the pipe can be handled without any detrimental abuse to the coating during shipment.

Reports of corrosion and leaks of pipe lines show the need for more adequate coatings properly applied instead of meager, thin coatings or in some cases no coatings. By supplementing these with cathodic protection, an appreciable increase in the life of pipe lines and elimination of leaks can be realized. For under ground and under water, a filled oxidized asphalt enamel specially compounded for such service, applied hot in two coats over asphalt primer, is recommended. It possesses good resistance to water absorption, soil stress, low-temperature cracking, shatter, slippage, electric conduction, acids, and alkali. Under more severe conditions, the asphalt-saturated wrappings should be used in addition. To prevent penetration of marine organisms as experienced at Lake Maracaibo, a cement shield, synthetic rubber, a special plastic, or a metallic foil shield is suggested. Where oil resistance is required, it is good practice to use coal tar instead of asphalt.

Pipe lines or other equipment, subject to alternately wet and dry conditions, should be given special protection before installation as they are difficult to coat afterwards. Vinyl, bakelite, or bituminous coatings for resistance to either immersion or moist atmospheric conditions may be used and supplemented by galvanic protection with zinc or magnesium anodes.

Aboveground, pipe lines should be painted like structural steel with good preparation of surface and two coats of marine primer in the most corrosive locations such as water fronts. Over the marine primer should be applied air-dried bakelite finishes. For the water front conditions, alternately wet and dry surfaces or other similar salt-water corrosion, painted galvanized steel will give a greater life than painted steel and would be expected to justify the additional cost.

For pipe subject to internal sour-stock corrosion and erosion, steel pipe may be obtained with a cement lining, vinyl paint, heat-hardened phenolic coating or a synthetic-rubber lining. Heat-hardened phenolic-coated steel pipe is obtainable from a number of concerns. In such cases, it will be necessary to use flanged, threaded, or special Victaulic connections.

Marine Painting

During the past 10 years, the use of faster-drying paints such as the bakelite and alkyd products has reduced the waste previously experienced because of improper drying and has increased the life of coatings.

Vinyl paints have shown good resistance to sea water and marine atmosphere. Because of strong solvents they cannot be used over oil-base paints. They may have merit for surfaces in contact with sea water or for use inside cargo tanks if practical cleaning methods are developed. For steel buoys, vinyl or bakelite paints should give longer protection than the softer oil-base paints.

There have been various new developments in copper flake, copper oxide and other antifouling paints as a result of the latest research. Considerable work has been done by Bakelite Corp., Battelle Institute, Mellon Institute, and various paint concerns in projects for the Navy. Hot and cold plastics, some with vinyl constituents, have shown resistance to fouling for 2 years or more. They require sandblasting and are somewhat expensive. The basic operations in hot plastic painting include (1) sandblasting, (2) passivating with dilute phosphoric acid, (3) brushing or spraying three coats of anticorrosive primer, (4) applying the hot plastic to a minimum of 0.030 in.

Petrolatum and paraffin coatings help to prevent fouling but are not satisfactory in regard to resistance to abrasion or slightly elevated temperatures.

For concrete floors where painting is required, the best results are obtained from rubber-base paints which may be applied over alkaline surfaces or bakelite oleoresinous paints may be used after neutralizing alkalinity with a zinc-sulfate solution and allowing to dry completely.

Fireproofed Structural Steel

In cases of corrosion of steel in back of concrete, gunite, or brick, all such fireproofing should be adequately waterproofed with two coats of an emulsified asphalt or coal tar which may be applied over a damp surface or a fibrated asphalt on a fairly dry surface. As a further precaution to prevent corrosion in corrosive locations, the steel should be coated with asphalt, galvanizing or other suitable coating before fireproofing with brick. Normally gunite or rich concrete are sufficiently dense and impervious to assure good protection by themselves and will have a better bond to the steel without a coating. In case of cracks or porous material in corrosive locations, adequate exterior waterproofing should be applied.

Under insulation of steel where temperatures are less than 200° F. and not sufficient to drive off moisture, a ⅛-in.-thick waterproof barrier is recommended between the steel and the insulation.

Heat-Resisting Paints

Various tests have been made on heat-resisting paints for stacks, breechings, heat exchangers, exhaust pipe, mufflers, boiler fronts and other hot surfaces. The outside temperature at the lower part of the stacks may be reduced by internal insulation.

For temperatures up to 900° F., good protection can be obtained from a zinc-dust gray paint in one coat directly over clean, dry steel. When the vehicle burns off, the zinc pigment fuses into an alloying coating on the steel so that some continued protection is obtained.

Other heat-resisting paints available for lower temperatures consist of coal-tar black with ceramic frets for temperatures from 400° to 650° F., alkyd aluminum paint for exterior surfaces up to 600° F., and gilsonite black for temperatures up to 500° F. Some black or aluminum paints, made with ceramic frets, are claimed to withstand temperatures up to 1,000° F. or more.

For trucks and passenger cars, the old color-varnish coatings requiring so many operations and so much time for completion have long been replaced, first by bakelite products and later by alkyd enamels and primer surfacers. The latter are quick drying and surpass the bakelite in retention of color, gloss, and adhesion.

Similarly for curb pumps and other equipment, alkyd enamels are of the type recommended over a neutral gray primer-surfacer for the best protection, appearance, and advertising value.

To prevent corrosion underneath tank cars and railway cars, particularly in corrosive atmospheres, two coats of a fibrated asphalt or heavy-bodied rust preventive should give good protection. Quick-drying emulsified asphalt or coal tar, vinyl, and rubber-base paints are being used for protecting underside of automobiles.

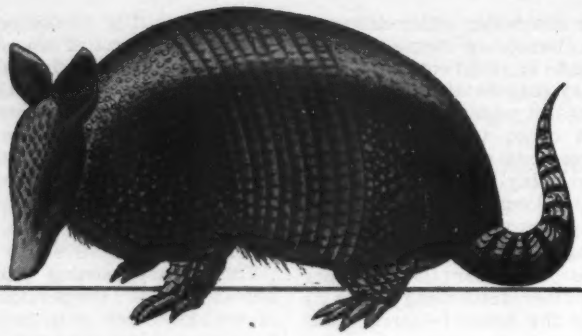
Acid and Alkali Resisting Paints

For acid and alkaline services, coatings are generally of vinyl, phenolic, furane, synthetic rubber, coal tar, or asphalt. Vinyl paints were previously discussed. Phenolic paints are not satisfactory in regard to alkali resistance but will withstand temperatures up to about 300° F. Coal tars and asphalts require heavy application. The asphalts are not satisfactory in regard to resistance to oils or solvents. Synthetic-rubber linings are more flexible than the phenolic paints and will stand temperatures up to about 250° F.

Acid-resistant coatings must be free from porosity and pinholes, otherwise acid will penetrate and cause corrosion underneath the coating even though it is acidproof.

Gasoline-resistant Coatings

For gasoline resistance, the following are the most common types from which a selection can be made but each has some limitation: vinyl chloride and vinyl acetate copolymer or other vinyl, bakelite or other



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phenolic air dried or heat hardened; ethylene polysulfide, polychloroprene, or acrylonitrile synthetic rubber; glyptal (alkyd), shellac, polyvinyl alcohol, and coal tar.

Of these the vinyl and phenolic are the most practical. Heat-hardened coatings are better than air-dried but in many cases they are not practical. The glyptal or alkyd is not satisfactory in regard to resistance to alkali, acids, or high aromatics. The shellac and polyvinyl alcohol are not water resistant. Emulsified Thiokol permits penetration of moisture. Coal tar is partly soluble in gasoline.

For protection during shipment and storage, a heavy petrolatum grease is recommended for machined, threaded, and other outdoor storage and can be readily removed by means of a solvent.

Vinyl strippable coatings for protecting idle equipment and storehouse stock appear to be limited to special requirements where the usual rust preventives cannot be used.

New Plastic Coatings

In many cases the well-known alkyd and phenolic coatings, which have been known for some years or have been recently modified, are not surpassed by the new plastic coatings. As discussed in other sections, vinyl coatings, some of which have been known for more than 5 years, have some merit for special conditions. They are still in an experimental stage to determine whether their higher cost, additional coats, and necessity of sandblasting are warranted.

Among the new plastics are the silicone paints which can be used at elevated temperatures. They have shown merit for electrical equipment and have helped to reduce the size of motors for a specified horsepower. They are very high in cost, require baking and are not resistant to hydrocarbons. Use for oil-industry requirements has not been proved.

Phenolic products with a catalyst to facilitate air drying are prohibitive in cost but are being tested.

Cellulose butyrate acetate lacquers have been investigated but they appear to be more suitable for airplane dope than for use in the petroleum industry.

Other plastic paints include melamines, methacrylates, styrene, polyethylene, urea formaldehyde, nitrocellulose, and phenolic dispersion resin. The last two are used in very fast-drying products. They showed merit for use in wartime equipment but do not at this time appear to be needed for oil-industry painting.

Flame-sprayed Thiokol has provided a heavy protective coat for propeller shafts and has been suggested by the suppliers for lining tanks. To date it does not seem to be of sufficient merit to justify its high cost.

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265 h.p. Farrell-Birmingham speed increasing gear units, 600 r.p.m. to 3600 r.p.m., to

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1 — 27,000 bbls., 600 lbs., Ingersoll-Rand 4" 6-stage, 1800 r.p.m., centrifugal pump with

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STEAM-TURBO GENERATOR

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Aviation Gasoline Survey

by W. C. Holliman, M. G. Barker,† and N. Potts‡*

THIS report§ on the characteristics of commercial aviation gasoline (March 1947 production) presents a summary of inspection test data furnished by manufacturers of commercial grades of aviation gasoline, and special data obtained in Bureau of Mines laboratories on samples of these gasolines. Data and physical samples were submitted by 15 manufacturers on 18 grade 80, 21 grade 91/98, 22 grade 100/130, and 10 grade 115/145 aviation fuels.

These data, averaged by grades as meet the AN-F-48a or ASTM Designation D910-47T specifications with a few exceptions. Octane and performance number averages are above the minimum requirements for each grade. Tetraethyl lead content in the 91/98 and 100/130 grades generally is above the maximum outlined in these specifications, whereas dye color for each of the four grades, with the exception of two gasolines in grades 80 and 100/130, is that designated for the particular grade.

Distillation requirements, with a few exceptions at individual points, are met by gasolines of all grades. Reid - vapor - pressure, copper - dish - residue, heat - of - combustion or aniline-gravity-constant, freezing - point, and copper - strip - corrosion requirements are met by all gasolines so far as reported. No data for some of these tests were submitted on a few of the gasolines. One gasoline, grade 115/145, shows a sulfur content greater than the specified maximum.

Comparisons are made, so far as possible, between the data obtained in this survey and those reported for the same grade gasolines in the earlier reports made by the National Bureau of Standards. Surveys to determine the characteristics of commercial aviation gasolines have been conducted periodically since 1940 by the National Bureau of Standards under a cooperative agreement with the Coordinating Research Council, Inc. The surveys were concerned primarily with those characteristics of aviation gasoline most closely related to vapor-lock problems, and the laboratory work done and data obtained were limited to the determination of these properties and their interpretation in relation to vapor lock. A series of reports was made that gave the results of precise laboratory determinations of vapor pressure, distil-

*Petroleum research chemist, †Petroleum chemist, ‡Chemist, all with U. S. Bureau of Mines. §U. S. Bureau of Mines Report of Investigations 4273.

SUMMARIZED DATA ON AVIATION GASOLINE CHARACTERISTICS (AVERAGE BY GRADES)

Grade—	Octane No., Lean* mixture	Performance No. Lean* mixture	Performance No. Rich† mixture	TEL, ml./gal.	R.v.p., psi.	Aniline point (°F.)	Sulfur, weight per cent	Distillation characteristics‡ (evap. basis), °F. 10%	50%	90%
80	80.4	....	....	..	6.4	144.7	0.015	150	197	242
91/98	93.9	....	....	2.80	6.5	139.8	0.018	148	198	241
100/130	Iso+ 0.15	105.9	130.9	3.36	6.3	152.7	0.016	152	207	246
115/145	....	108.2	148.0	4.35	6.3	157.6	0.03	151	212	243

*A.S.T.M. D614-46T (CRC F-3, AN-F-19). †CRC F-4 (AN-F-18). ‡A.S.T.M. D86-46.

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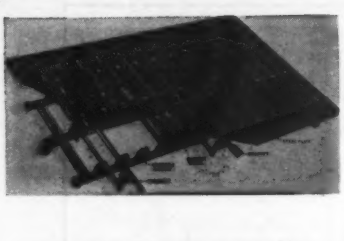

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lation characteristics, density, and viscosity. Correlative reports also were issued that discussed these characteristics in relation to phases of the vapor-lock problem. The surveys are summarized in the 1946 CRC Handbook and were discontinued by the National Bureau of Standards in 1946.

New Surveys Begun in 1947

Under cooperative agreement between the Bureau of Mines and the Coordinating Research Council, the first survey was begun in 1947. Future semiannual surveys are planned for January and July production of each year.

Whereas previous surveys were conducted on a limited basis in connection with vapor-lock problems, the current surveys are expanded to include other information of general interest to aviation-gasoline manufacturers, aircraft-engine builders, airplane manufacturers, and airline operators.

Previous Aviation Gasoline Survey Reports

The following reports giving data obtained in National Bureau of Standards—Coordinating Research Council aviation-gasoline surveys have been published by the Coordinating Research Council, Inc., 30 Rockefeller Plaza, New York 20, N. Y.:

Report 1, Series II. Survey of $\eta 0.25/\rho$ Ratio for Commercial Aviation Gasolines. June 3, 1940.

Report 2, Series II. Change of Vapor Pressure with V/L Ratio for Commercial Aviation Gasolines. June 5, 1940.

Report 3, Series II. Analysis of Data on Change of Vapor Pressure with V/L Ratio. August 12, 1940.

Report 15, Series II. Survey of Commercial Aviation Gasolines (1941 Production). April 10, 1943.

Report 17, Series II. Survey of Commercial Aviation Gasolines (1941-42). August 30, 1943.

Report 21, Series II. Survey of Commercial Aviation Gasolines (1943 Production). January 14, 1944.

Report 22, Series II. A Summary of Aviation Fuel Characteristics from 1940 to 1943. December 16, 1943.

Report 23, Series II. Survey of Aviation Fuel Characteristics (91 and 100 Octane Number Fuels). July 1944, revised August 27, 1946.

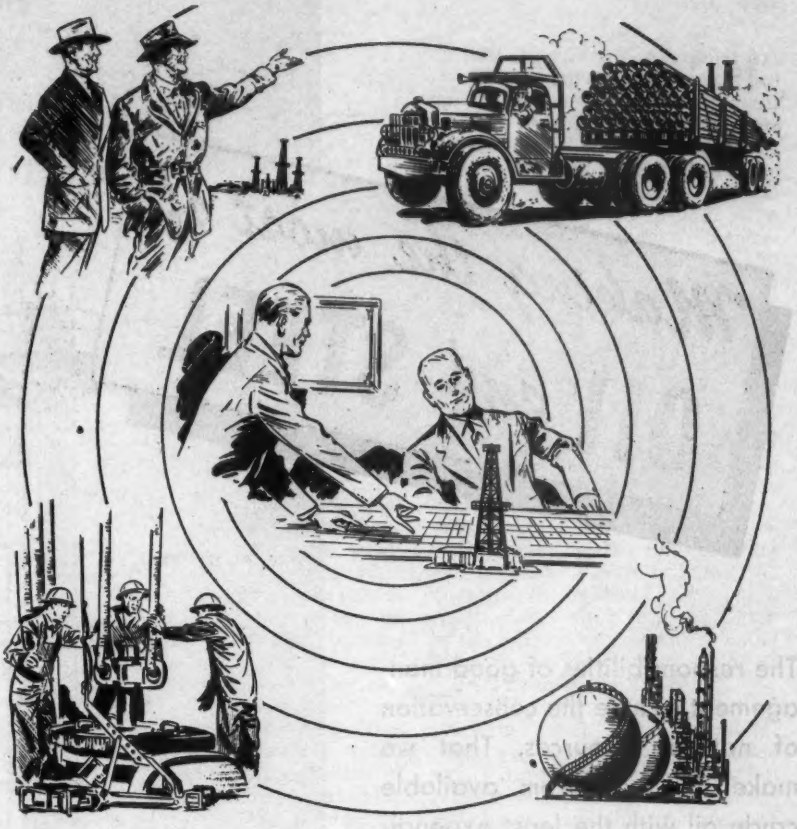
Report 24, Series II. Survey of Aviation Fuel Characteristics (January 1945, 100 Octane Number Fuel). March 27, 1945, revised July 21, 1945, and August 10, 1945.

Report 25, Series II. Survey of Aviation Fuel Characteristics (March 1945; 91 Octane Number Fuels). June 28, 1945, revised August 27, 1946.

Report 27, Series II. Survey of Aviation Fuel Characteristics (January 1946 Production; 100 and 91 Octane Number Fuels). March 14, 1946.

New Crude Price Posting In Lost Soldier Field

Sinclair-Wyoming Oil Co. announced a price posting for oil from the recently discovered Cambrian sand at Lost Soldier field, Fremont County, Wyoming, retroactive to 7:00 a.m. June 21. The new price is the same as that for Tensleep, Madison, and Amsden formation oils, $2.10 per barrel for below 20° gravity, with a 2 cent per degree differential to $2.52 for 40° gravity and above.



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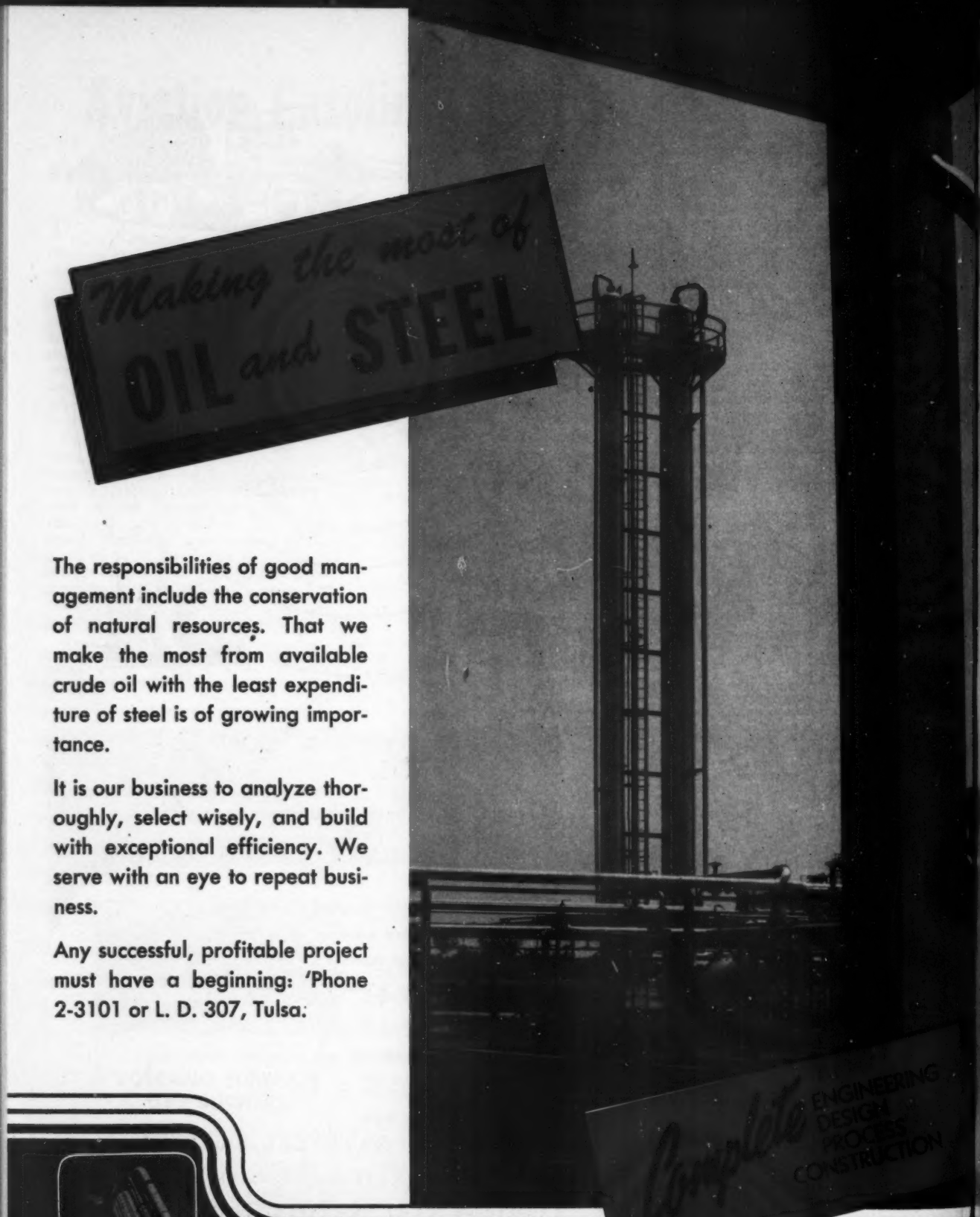

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ENGINEERING *fundamentals*

Dependence of Production on Gas Withdrawals

THE amount of pressure decline which accompanies a certain fractional withdrawal of oil from a reservoir will depend upon the physical properties of the reservoir fluids (gas in solution, compressibility, formation volume factor), upon the magnitude of the gas cap that was present, upon the amount of water production and encroachment, and upon the amount of gas produced along with the oil. The physical properties of the fluids and the amount of gas cap are fixed quantities. It is of interest to inquire into the changes due to the amount of water production and encroachment or due to the amount of gas produced with the oil. The present discussion will be concerned with the latter.

In order to simplify the approach, it will be assumed that the water production and encroachment and the initial gas cap are zero. The quantitative evaluation of the desired change is given by the material balance equation (Engineering Fundamentals No. 333). This equation was written as:

$$N(u-u_o) = \Delta N\,[u + (R_e - r_o)v] \quad (1)$$

Rearranging this equation gives:

$$\frac{\Delta N}{N} = \frac{u - u_o}{u + (R_e - r_o)\,v} \quad (2)$$

Now $\Delta N/N$ is the desired fractional production of original oil in place, R_e is the total amount of gas produced divided by the total amount of oil produced, and u_o, u, r_o, and v are physical properties of the reservoir fluids dependent in value upon the original pressure and the pressure at a given time. Thus, from Equation 2 it is possible to evaluate the fractional production of oil at a given pressure value if a value of R_e is assumed.

It would appear that Equation 2 might yield a value of $\Delta N/N$ equal to one (all oil produced) by having R_e equal to zero or a small number. Although the equation would actually yield this result, it does not mean that such can be achieved. The material balance equation does not reflect the mechanism of production and any calculation therefrom must be carried only as far as the production mechanism will allow. In other words, the assumed calculation of $\Delta N/N$ must terminate at that value in agreement with the residual oil content that results from the type recovery being considered. Furthermore the value of R_e does not reflect the magnitude to which the current gas-oil ratio has risen. It measures only the **cumulative** gas divided by **cumulative** oil.

Fig. 1 illustrates the variation obtained in cumulative recovery at a given pressure for varying amounts of gas withdrawn. This calculation is not meant to apply quantitatively to any specific reservoir but it does show the general effect of producing with various quantities of gas. The data used for this calculation assumed an initial reservoir pressure of 3,500 psia. and saturated crude oil with no initial gas cap. The original gas in solution was assumed to be 1,040 cu. ft. per barrel and the original f.v.f. to be 1.58. For convenience, the amount of the produced gas is put in terms of a multiple of the original gas in solution. $R_e = 0$ means all gas was reinjected. $R_e = r_o$ means that reinjection was carried on to the extent that only the gas originally in the produced oil remained as produced gas. All calculations were terminated at 60 per cent $\Delta N/N$, it being assumed that the gas-recovery mechanism would not produce beyond this point.

Such a chart as this could be prepared for any reservoir fluid and the predicted cumulative at a given pressure be picked knowing the cumulative gas-oil ratio. Or, conversely if a certain cumulative were desired by the time pressure had fallen to a definite value, the quantity R_e indicated by such a chart would allow the prediction of the amount of gas which would have to be reinjected. This, of course, assumes no bypassing.

If an oil of different physical properties were under consideration, the actual values plotted would differ from those given, but relative positions of lines indicating varying amounts of produced gas would be the same as shown.

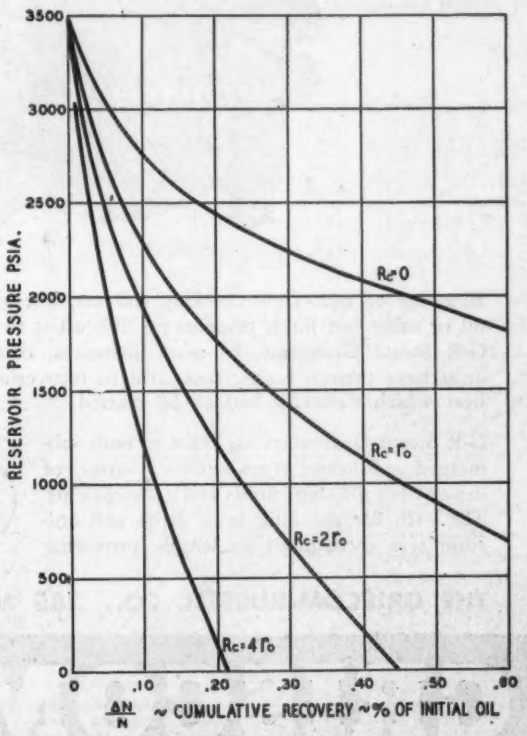

Fig. 1—Calculated effect of gas withdrawals on ultimate recovery. R_e = Cumulative gas-oil ratio. r_o = Original gas in solution

Series by Dr. John C. Calhoun, Jr., Chairman, Petroleum Engineering School, University of Oklahoma

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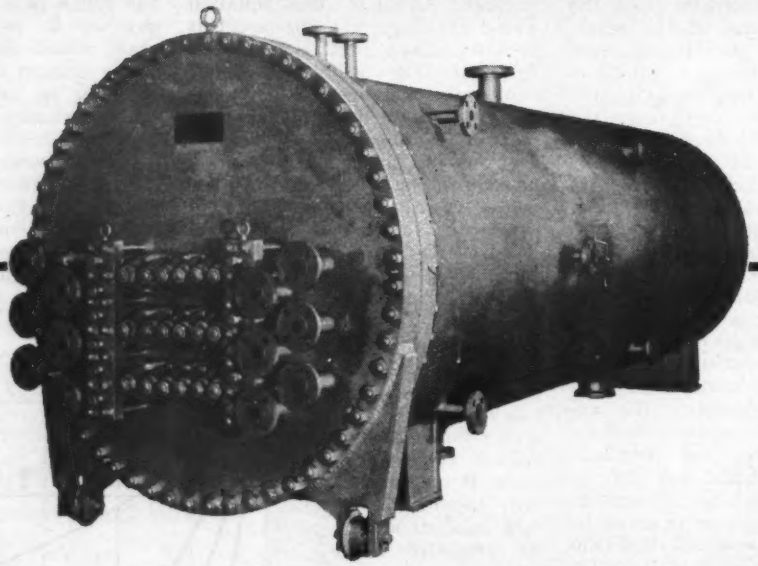
...Make Them Produce High Pressure Steam in a G-R STEAM GENERATOR



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The Refiner's Notebook

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

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12 and 20-In. Pipe

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$$t_m = \frac{PD}{2S} + C$$

t_m = minimum thickness, in.

P = internal minus external pressure, psia.

D = actual outside diameter, in.

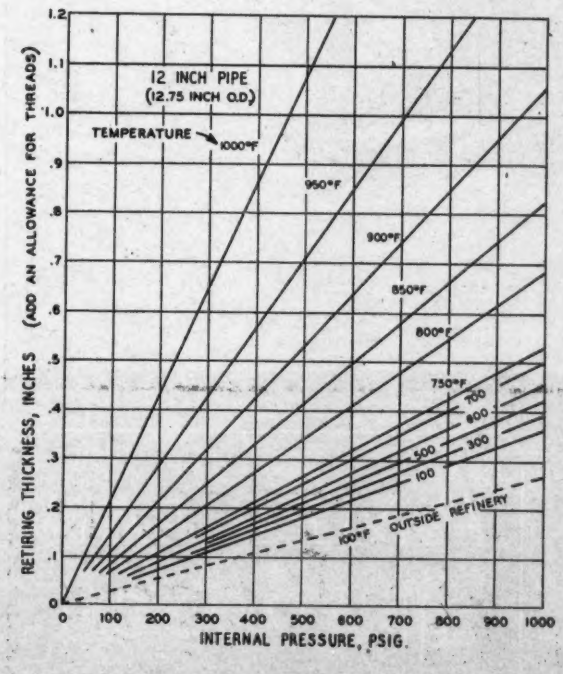
S = allowable metal stress, psi. (see tabulation of materials)

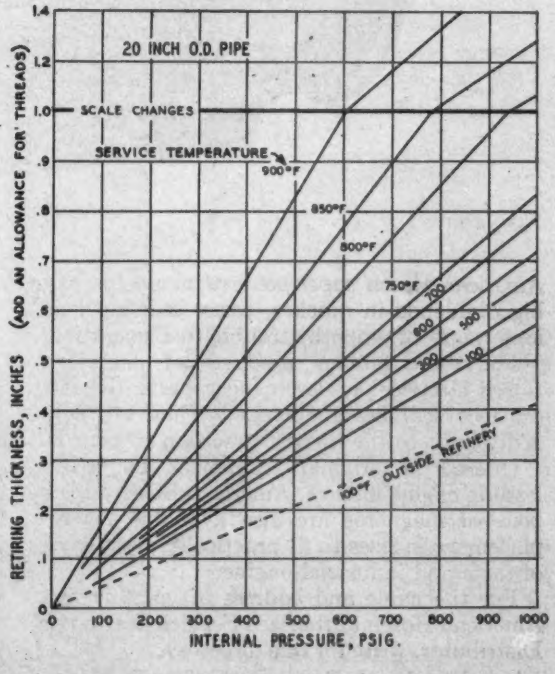
C = allowance for threading, welding, mechanical strength and/or corrosion

Values of C		
Welding		0.05
Pipe threads		
	⅛-in.	0.03
	¼-⅜-in.	0.044
	½-¾-in.	0.057
	½-in.	0.07
	2-in. up	0.10

Other materials	Specification	Multiplier for thickness
Grade A seamless	A.S.T.M.-106 A.P.I.-5L	1.0
Grade B seamless	A.S.T.M.-106	.77
Grade B seamless	A.P.I.-5L	.80
Grade C seamless	A.S.T.M.-106, A.P.I.-5L	.84
Lap welded	A.S.T.M.-53, A.P.I.-5L	1.33
Butt welded	A.S.T.M.-53, A.P.I.-5L	1.60

Refer to Refiner's Notebook No. 192 (Inspection), April 15, 1948, and a correction of Table 2 which appeared May 13, 1948, for a discussion of A.S.A. Code for Refinery and Gasoline Plant Piping, the effect of temperature, etc.





No. 204 in a series by W. L. Nelson, professor of petroleum refinery engineering, University of Tulsa

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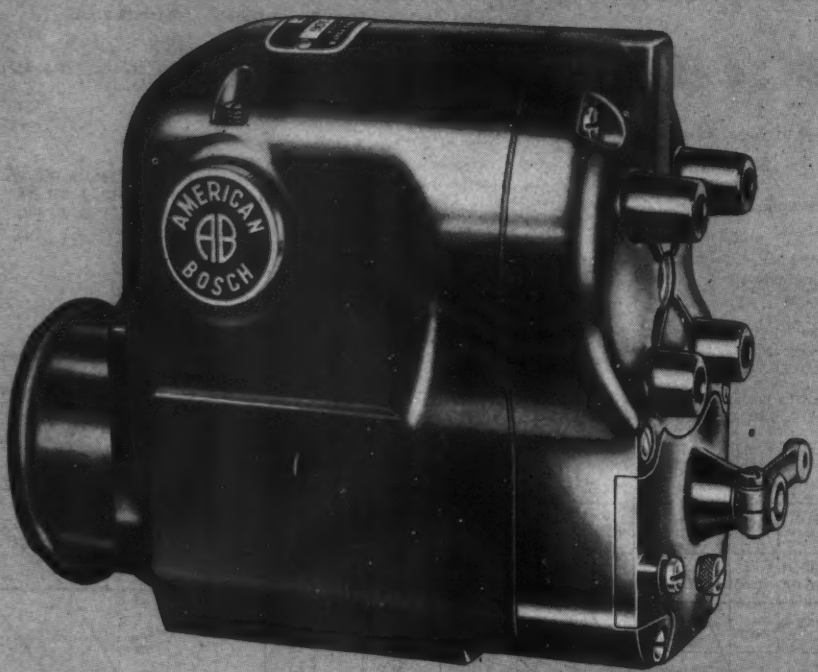

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REFINING

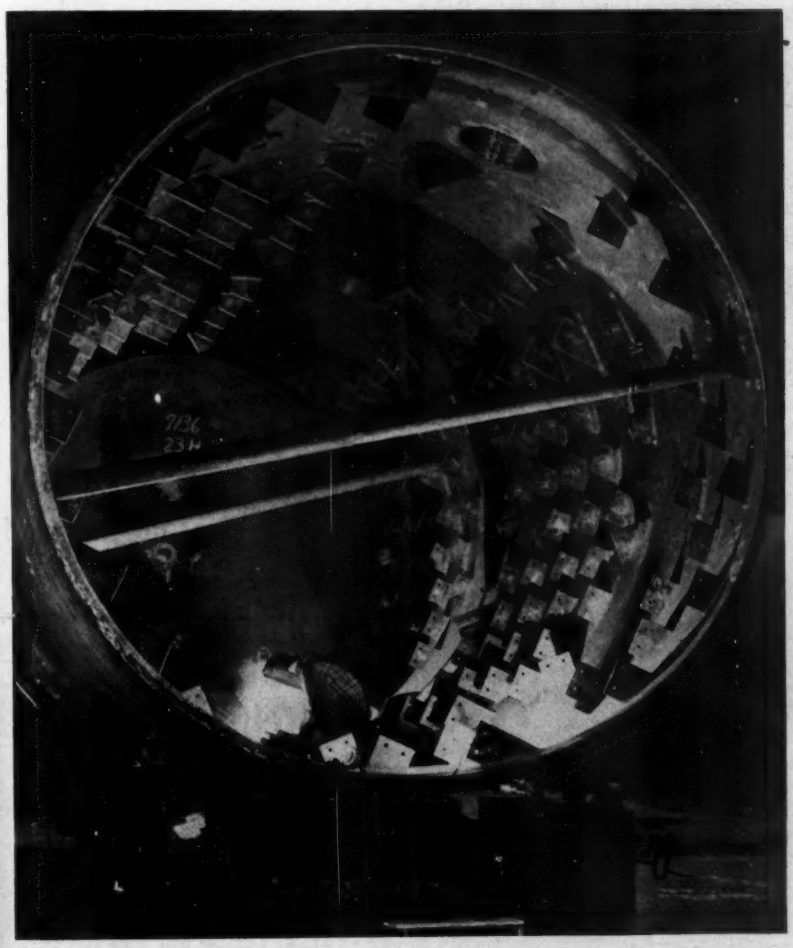
Special Vessels Built For Corrosive Crude

THE high sulfur content of some foreign crudes requires fabrication of pressure vessels with unusual wall thickness, and two propane decarbonizing towers 12 ft. in diameter and 75 ft. in length and meeting difficult specifications have just been completed for export by M. W. Kellogg Co. in Jersey City.

Due to the presence of active sulfur compounds in the reduced crude oil which will be processed, ⅛-in. corrosion allowance was added to the vessel walls. To provide ample margin of safety, a safety factor of five was employed. Normal working pressure for the vessels is 500 psi. Walls of the vessels are 2⅝-in. thick. The principal material of construction was a high tensile strength carbonsilicon steel.

Precise welding control was employed in preventing cracking of metal adjacent to the weld or in the weld and to develop weld strength equal to that of the plate. Approximately 24 layers of weld metal were required in each joint. All principal joints were welded automatically by a continuous submerged-arc process, with machines incorporating mechanical design features developed by Kellogg engineers. Welding of the external and internal attachments was performed manually using a ferritic low-hydrogen type of electrode.

Inspection of welds included radiographing of all main butt joints, and



A stage in the fabrication of a 75-ft., 175-ton, propane decarbonizing tower designed to withstand unusual corrosive conditions

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magnetic particle inspection of all strength welds not radiographed. In addition to this nondestructive inspection, test plates were welded as continuations of the longitudinal seams. Tests made on these plates were in accordance with the requirements of Lloyds Register of Shipping Rules for Welded Pressure Vessels. Tests included all-weld tensile, joint tensile, bend, impact, hardness and photomicrograph specimens. The finished vessels were stress relieved in specially constructed furnaces to remove locked-in stresses.

Because of its excessive weight and thickness, the flat plate for these 75-ft. towers was hot-rolled in six equal sections. Despite the thickness of the plate, these sections were maintained well within the out-of-round-tolerances allowed by the A.P.I. and A.S.M.E. codes.

The interior of the vessels contain numerous supporting brackets for steam coils, distributor troughs, and baffles.

Test Run Scheduled Soon At Imperial's Refinery

EDMONTON, Alta.—The first test run at the new 6,500-bbl. Imperial Oil, Ltd., refinery at East Edmonton will be made early in July, and regular operation will commence the latter part of the month. The complete plant will be on stream by the end of the year.

Shell Chemical to Move Headquarters to New York

NEW YORK.—The headquarters of Shell Chemical Corp., a subsidiary of Shell Oil Co., Inc., will be transferred to New York City from San Francisco, it was announced here, by J. Ostermeyer, Shell Chemical president. This transfer includes the administrative offices and will in no way affect the company's operations on the Pacific Coast, the headquarters for which will remain in San Francisco.

It is not known just when the transfer will be made, officials said. The move will bring to New York City approximately half the San Francisco staff of about 250 persons, company officials said.

Husky's Plant Additions Boost Refinery Output

LLOYDMINSTER, Alta. — Husky Oil & Refining Co. has completed additions to its refinery, raising capacity from 3,500 to 5,000 bbl. daily, and by mid-August expects to step this up to 7,500 bbl. The refinery features Bunker C fuel and a wide range of asphalt products, utilizing heavy crude from Lloydminster field. Production of the field, averaging 3,473 bbl. daily in May, is expected to double before the end of the year.

New Products Marketed

Two new products, Calol Grease ACF-250 and Calol T. R. Compound, were recently placed on the market by Standard Oil Co. of California. Calol ACF-250 is a medium high melting point grease of soft consistency having high water resistant and antirust qualities. T. R. Compound is a new product for use in tapping and reaming both in hand and machine operations on work using stainless and other tough steels and using a wide range of tap sizes and reamers.

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PIPE LINES

New Line Asked to Supply San Juan Gas to Bay Area

Authority to construct a 26-in. natural-gas pipe line from the San Juan basin in northwestern New Mexico to the Arizona-California boundary, a distance of 451 miles, has been asked of the Federal Power Commission by San Juan Pipe Line Co., a new company.

At the border the line would connect with the Texas-California line of El Paso Natural Gas Co. for delivery of gas to companies supplying the San Francisco Bay area where the applicant says there will be a shortage of 150,000,000 cu. ft. per day by 1951 unless additional gas can be obtained from a source outside of California.

Another proposal to take San Juan Basin gas to San Francisco by way of Salt Lake City is being considered by Byrd-Frost, Inc., Dallas, and associates, which have extensive gas acreage in the Basin (*The Oil and Gas Journal, July 1, page 34*).

In addition to the transmission line, the San Juan company seeks authority to construct more than 100 miles of feeder and gathering lines, a compressor station with 3,000 hp., a natural-gasoline extraction plant, and a gas-dehydration plant. Total cost of the proposed facilities was estimated by the company at $28,000,000.

Westward Crude Volume Triples in Past Year

Westward movements of crude oil have been increasing within the past year from 7,000-8,000 bbl. to a current rate of 20,000 to 25,000 bbl. daily through several systems including those of Buckeye Pipe Line Co., Southern Pipe Line Co., National Transit Co., Northern Pipe Line Co., Tide Water Pipe Co., Ltd., and Ohio Oil Co. Of these Buckeye, Tide Water, Northern, and Ohio are handling both east and west movements simultaneously.

According to recent reports, approximately 9,000 bbl. daily is moving westward from the Philadelphia area through the Southern, Ohio, and Buckeye systems via Lima, Ohio, to Toledo, Ohio, refineries, while approximately 13,000 bbl. is going from the New York area through a series of pipe lines including Tide Water and Buckeye to Cygnet, Ohio, where it enters the line of Transit and Storage Co. which delivers at Sarnia, Ont.

Most of the western movement is South American oil, and the remainder is Gulf Coast oil. A small westward movement of crude oil started shortly before World War II. During the war it was discontinued and subsequently resumed.

Jal-Cushing Pump Station Contracts Are Awarded

HOUSTON.—Contracts for the construction of two more pump stations on the Jal, N. M.-Cushing, Okla., pipe line have been awarded by The Texas Pipe Line Co.

Graver Construction Co., Houston, has the contract to build a station at Wichita Falls at a location 1¼ miles east of the city. Brown Lane Co., Amarillo, will build the Wink, Tex., station 2½ miles northeast of town.

Construction is to start immediately on the two modern stations both of which will be equipped with electrically driven centrifugal pumps. Stations already are under construction at Jal and Midland, Tex.

The 20, 22, and 24-in. line will move crude oil out of the Permian basin and from Cushing through other lines to Midwest refineries. The line is owned on an undivided interest basis by Texas Pipe Line, Shell Pipe Line Corp., Empire Pipeline Co., and Sinclair Refining Co.

The line is now in service as far as Wichita Falls. Shell Oil Co., Inc., and Texas Pipe Line are now completing tank-car loading racks at Wichita Falls to handle about 70,000 bbl. daily as a temporary measure pending completion of the entire line to Cushing.

Southern Natural Receives Pipe for 24-in. Project

Southern Natural Gas Co. recently received 2 miles of 24-in. pipe which represents the first delivery of pipe made from Republic Steel Corp.'s new pipe mill at Gadsden, Ala., which is scheduled to supply all the 140 miles of pipe required for the construction of a Southern Natural project planned for increasing the transmission of gas to Birmingham, Ala.

When the Republic plant at Gadsden attains full capacity operation, it will produce about 65 miles per month of 30-ft. joints in diameters from 20 to 30 in. For some orders, the mill will double-joint so as to

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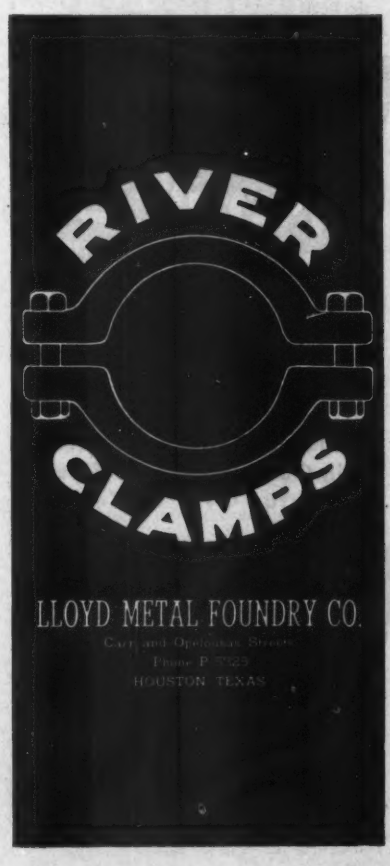

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deliver in 60-ft. sections. When the pipe mill reaches capacity operation it will use most, if not all, of the output of the Republic plate mill, according to E. I. Evans, manager of Republic's operations in the South.

Potomac Gas Co. Plans 18-Mile, 16-In. Line

Potomac Gas Co., a wholly owned subsidiary of Washington Gas Light Co., has requested Federal Power Commission authority to build an 18-mile 16-in. natural-gas pipe line, from a point near Dranesville to Arlington, Va. The purpose of the project is to augment the supplies of natural gas available to Washington Gas Light Co. and its subsidiaries for distribution in the Washington metropolitan area.

Cost has been estimated at $1,200,000. The line would be completed by December this year, company officials announced. By next winter the line would have a peak-day capacity of 30,000,000 cu. ft. daily, which would be distributed equally to Virginia and the District of Columbia.

At its starting point near Dranesville, the proposed line would be connected with the existing 20-in. line operated by Virginia Gas Transmission Corp., a subsidiary of Atlantic Seaboard Corp. Atlantic Seaboard is now the sole supplier of natural gas to Washington Gas Light Co.

Superior Gives Trunkline Gas Option, Is Report

The Federal Power Commission last week postponed until November 8 the hearing, previously set for June 28, on the application of Trunkline Gas Supply Co. requesting authorization for a natural-gas pipe-line project extending from Wharton County, Texas, to Keokuk County, Iowa.

Negotiations are reported in progress between Superior Oil Co. and Trunkline whereby Superior has given Trunkline an option on 200,000,000 cu. ft. daily to supply the proposed line under a 20-year contract at an average price of 11½ cents per thousand cubic feet. Superior's reserves are listed at one and a half trillion feet.

Trunkline is headed by Ralph Davies, former petroleum administrator for war, and Lewis W. MacNaughton of DeGolyer & MacNaughton, Dallas.

FPC Consolidates Texas Eastern Hearing, July 12

The Federal Power Commission will hold a consolidated hearing, opening July 12, on applications filed by Texas Eastern Transmission Corp.,

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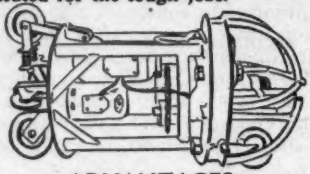

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City Gas Co. of New Jersey, and Revere Natural Gas Co.

Texas Eastern seeks installation of an additional 86,150 hp. in compressor stations to increase delivery capacity of its system from 433,000,000 to 508,000,000 cu. ft. daily. Cost of the proposed project is estimated at $10,330,500 and would bring the total cost of the Texas Eastern system to $182,737,500.

City Gas and Revere Natural in their applications have asked the commission to require Texas Eastern to establish physical connection with their facilities and sell gas to them.

Texas-California Crude Line Planned by New Firm

Negotiations are being conducted by a new firm, Texas-Western Oil Lines, Inc., with the objective of building a crude-oil line from West Texas to California. The project has been planned to extend 900 miles from a point in the Midland-Odessa, Tex., area to California in the vicinity of Los Angeles. The diameter of the line would be 20-in. or 24-in.

J. S. Jenner, president of the company, says that negotiations have been carried far enough with West Texas producers and California refiners to indicate that arrangements have prospects of being completed for crude-oil connections, refinery outlets, and finances, in order that construction may start in the middle of 1949. A throughput of 150,000 bbl. daily is regarded by Jenner as a profitable base load for such a project.

Arrangements have been made to procure pipe for 1949 delivery, according to Jenner. The headquarters office of Trans-Western (a Delaware corporation) is at the office of Charles H. Smith Co., utility engineers, Room 1208, 20 Broad Street, New York. Those associated with Jenner in the undertaking include Charles H. Smith, Malcolm Langford, and Elmer Langford.

FPC Grants Authorization To Loop Calumet Line

Chicago District Pipeline Co., Joliet, Ill., has received Federal Power Commission authorization to loop its existing Calumet line with approximately 41 miles of 24-in. pipe extending from Joliet to the southern city limits of Chicago. The line is expected to be in operation by 1952.

Cost of the proposed line is estimated at $4,000,000. In addition the company plans to repair and rehabilitate the Calumet line which has undergone considerable corrosion since its original construction in 1930 and 1931. The company's application stated that construction was planned immediately upon receipt of FPC authorization.

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Three New Oklahoma Drilling Firms Organized

Three new Oklahoma drilling companies have been incorporated and listed with the secretary of state. K & S Drilling Co., Bartlesville, with capital of $100,000, has been organized by R. J. Straight, John M. Kane, and Laton L. Doty, all of Bartlesville.

Reavis-Collins Drilling Co., Inc., Tulsa, with capital of $25,000, has been incorporated by Cecil Reavis, George J. Collins, and M. H. Collins. In Oklahoma City, M & H Drilling & Pipe Co. has been formed with $25,000 capital by R. G. Marchant, J. T. Herndon, and Guy O. Marchant, all of Oklahoma City.

Spartan Drilling Co., Dallas, is drilling ahead below 2,000 ft. at Stanolind Oil & Gas Co. 1 Bodcaw Oil Co., wildcat in NE SW 29-19s-22w, Lafayette County, Arkansas. Part of the hole is being drilled with the new Edco turbine bit.

Yarberry & Roberts has contract to drill test for Shepard-Pendleton, Ltd., in Whittier field of California.

Big Chief Drilling Co., Oklahoma City, has contract for a Humble Oil & Refining Co. wildcat, the 1 T. O. Milner, J. F. Martin Survey, 2 miles northeast of Fosterville, Anderson County, East Texas.

Roy Duffey, Dallas, is drilling Atlantic Refining Co. 1 John Riviere, wildcat in SA&MG Survey A-964, 5 miles southeast of Marysville, Cooke County, North Texas.

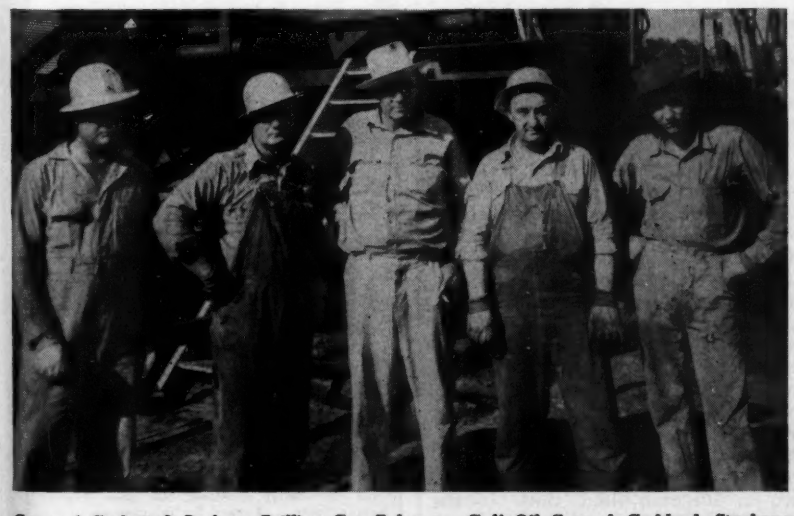
Owens & Lamb are contractors for Blackwell Oil & Gas Co. 1 Julia Petty, Tri-Cities field, Henderson County, East Texas.

Johnson & Flesher Drilling Co., Oklahoma City, and Harry A. Miller are planning to drill 1 Hazel Cobb, SW SW NW 30-15-5, Lincoln County, Oklahoma.

Rocky Mountain Drilling Co., Los Angeles, will drill test for Barnsdall Oil Co. in Lawndale area, Los Angeles County, California. Well is 1 Elizabeth Smith.

T. P. Pike Drilling Co., Los Angeles, is contractor for a test for J. Paul Getty in Northwest Athens area, Los Angeles County, California.

San Joaquin Drilling Co., Los Angeles, has contracts for two Barnsdall Oil Co. tests in Newhall-Potrero field of California.



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See Composite Catalog Page 2426

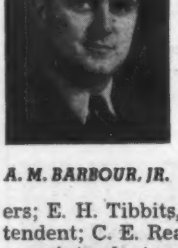
Corbett-Barbour Drilling Co., Tulsa

A. M. BARBOUR

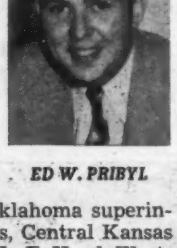
Growth.—H. L. Corbett, W. W. Corbett and A. M. Barbour entered the drilling game as Corbett-Barbour Drilling Co. in 1922. Sole equipment of the infant firm was one small cable-tool rig. By 1943, the interest of the two Corbetts had been bought out and the concern became a family affair with A. M. Barbour, Sr., and his son, A. M., Jr., the owners. Today the firm has become even more of a family affair with Barbour's son-in-law, Ed W. Pribyl, now the third partner.

Rigs.—Ten rotaries with capacities ranging from 3,000 to 10,000 ft.

Personnel.—A. M. Barbour, A. M. Barbour, Jr., and Ed W. Pribyl, owners; E. H. Tibbits, Oklahoma superintendent; C. E. Reaves, Central Kansas superintendent; and L. F. Hood, Western Kansas superintendent.



A. M. BARBOUR, JR.



ED W. PRIBYL

Sidelights.—Company is strong advocate of equipment standardization as is illustrated by the fact that all 10 of its rigs are of one manufacture. . . . In considerable contrast with many drilling firms of today, the company has no production of its own, sticking strictly to contract drilling. . . . A mobile telephone has been installed in the last few weeks in the car of Oklahoma Superintendent Tibbits. Initial use has proven very satisfactory in saving time both for Tibbits and the home office. . . . Currently, Corbett-Barbour has four rigs active in the "Golden Trend" of Oklahoma, two in Hugoton field, three in the Great Bend, Kans., area, and one in Oklahoma City. . . . Offices are located in Tulsa and Great Bend.

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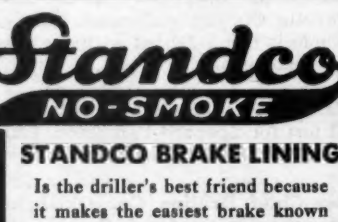

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NATURAL GAS

A. G. A. Research Tackles Natural-Gas Problems

RESEARCH projects of interest to the natural-gas industry are a part of the general research program of the American Gas Association on which nearly $1,500,000 has been spent during the past 3 years.

Under the heading of general technical research, the A.G.A. has a project on organic sulfur aimed to provide information essential for the economical removal of organic sulfur from gas. The first step, now nearing completion, has been the development of satisfactory methods for the identification and determination of the amounts of specific organic sulfur compounds and their properties bearing on the possibility of their removal. The second step is an analysis of chemical reactions that might prove economical and effective for the removal of these compounds.

Pipe-line coatings and corrosion research under way is aimed at developing information on the use of galvanic anodes and new products such as plastics and fiber glass for preventing or lessening pipe corrosions under various soil conditions. A patent on the use of sacrificial anodes has been applied for.

The pipe-line flow investigation of the association seeks to develop, by literature, laboratory, and field research, precise factual information on the flow of natural gas in pipe lines of the character completed since 1935. The study of publications on this subject is completed.

In studying the removal of nitrogen from natural gas a literature, laboratory, and pilot-plant investigation is under way to determine the possibility of denitrogenating natural gas at or near the well to eliminate the cost of transporting the nitrogen and to improve the B.t.u. characteristics of the gas. The literature survey has been completed.

Gaging and controlling oil-gas wells is being studied with the objective of obtaining fundamental data on gaging natural-gas wells and combination oil and gas wells, and on physical properties of hydrocarbon fluids.

Another A.G.A. project is aimed at the prevention of hydrates in pipe lines to make possible the prediction of the formation of hydrates under critical pressures and temperatures so as to avert such conditions or to facilitate preventive measures such as inhibitors or dehydrates.

The association has spent a total of $171,000 on this group of research studies and plans to spend approximately $75,000 more during the coming year.

United Is Authorized Full Capacity Operation

United Gas Pipe Line Co., Shreveport, La., has been authorized by the Federal Power Commission to increase deliveries of natural gas through its 24-in. Carthage-Monroe pipe line in eastern Texas and northern Louisiana to full capacity for supplying existing customers.

Capacity of United's line, limited heretofore to 172,000,000 cu. ft. daily because of war-emergency restrictions, will increase its capacity to an estimated 310,000,000 cu. ft. daily.

The two companies expected to benefit primarily from the new authorization are Southern Natural Gas Co., Birmingham, Ala., and Mississippi River Fuel Corp., St. Louis, Mo.

Under terms of the new order, United was also given authorization to deliver gas from the Carthage-Monroe line to oil and gas well drillers for temporary periods provided that such deliveries do not interfere with its service to existing customers.

Gas Supply Contracted For Oak Ridge Area

East Tennessee Natural Gas Co. of Chattanooga has contracted with the Atomic Energy Commission to supply natural gas to the Oak Ridge, Tenn., area, to provide alternate fuel to help guarantee continuous production of fissionable materials.

East Tennessee plans construction of a 150-mile pipe line from the company's main line in order to furnish the Oak Ridge operations a supply of 60,000,000 cu. ft. daily.

Construction awaits approval of the Federal Power Commission.

Columbia Carbon Buys War Assets Factory

Columbia Carbon Co. has purchased from War Assets Administration a channel carbon black factory of 180 burner buildings, near Seagraves, Tex., a gas desulfurizing plant in Seminole field, and 12 miles of 20-in pipe line and 19 workmen's dwellings.

The plant, which has a capacity of 12,000,000 lb. per year, cost the Government $2,226,000. Columbia Carbon paid $1,420,000 cash for the plant. The company plans to double the capacity of the plant by removal and reerection of units from the Texas Panhandle.

Natural Gasoline

Gulf Awards Contract For Crane County Plant

ODESSA, Tex.—W. H. Bowden Construction Co. has been awarded the contract for construction of Gulf Oil Corp.'s Crane County natural-gasoline plant 30 miles southwest of Odessa, according to Gulf officials.

The plant will be a high-pressure absorption-type gasoline-extraction unit, designed to operate at approximately 600 psi. pressure, handling some 40,000,000 cu. ft. of gas daily. Completion is scheduled for late 1949.

Facilities include nine 1,200-hp. angle-type gas-engine-driven compressors to boost gas pressure to 600 psi. before it is processed. The gas will be desulfurized after the second stage of compression and dehydrated upon leaving the high-pressure absorber. Four 800-hp. gas-engine-driven generators will furnish electric power for operating pumps and other auxiliary equipment.

The plant will be designed to extract 80 per cent propane, 98 per cent butane and all of the 26-lb. natural gasoline. Butane and propane will be pumped to a loading rack for shipment in tank cars and the natural gasoline will be delivered to Gulf's pipe line facilities.

Gas from Sand Hills, Waddell-Henderson, University Waddell Ellenburger and C-Bar Silurian fields, will be used by the plant.

Gasoline Plant's Safety Record Wins Holmes Award

Texas Pacific Coal & Oil Co., Fort Worth, was recently awarded the Joseph A. Holmes certificate of honor by the U. S. Bureau of Mines for the outstanding safety record achieved by the company's gasoline plant at Caddo, Tex. The plant has operated, with an average of 22 employes, from 1929 to 1948, a total of 931,216 man hours, without a lost-time accident over the 19-year period.

Receiving the award for Texas Pacific were R. Seibel, vice president, and C. S. Bronstad, foreman in charge of the Caddo plant. Presentation was made by G. M. Kintz, district supervising engineer of the Bureau of Mines, at a special meeting of company officials and employes at Caddo.

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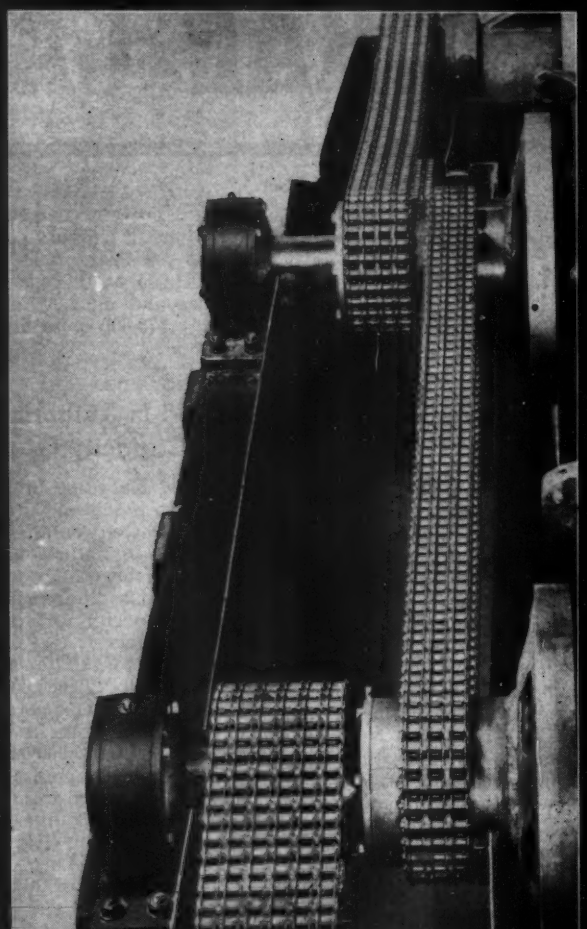

DIAMOND ROLLER CHAIN DRIVES

Diamond Chain Company, Inc. *Indianapolis 7, Indiana*

Exploration and Drilling

Wyoming's Powder River Basin in Red-Hot Play

THE Powder River basin of Northeast Wyoming hasn't been exactly a quiet area for some time, but the current situation is nothing less than red hot. Currently final tests are being awaited on three successive strikes, two on the east side of the basin, and one on the west side. Any one of them would ordinarily stir up excitement; the effect of three at once can be imagined.

The two east side strikes are in the play directed mainly at strat traps in sand pinchouts against the Black Hills uplift. This play began picking up momentum a little over a year ago with developments at Mush Creek. The first of the current hits was Bay Petroleum Co. et al 1 Christensen-Davis, NW SE 9-44n-66w, Weston County. The second was Sierra Petroleum Co. et al 1 Kummerle, NE SE 14-45n-65w, about 10 miles northeast of the first.

The Bay test topped Dakota at 6,712 ft., and on drill-stem test at 6,730-38 ft. (total depth), recovered 3,230 ft. of 36°-gravity clean oil in 80 minutes, or at estimated rate of 30 bbl. per hour. This well had previously checked oil saturation in the Muddy at 6,494-6,502 ft., the objective of most of the pinchout plays, but a drill-stem test recovered no oil.

The Sierra test topped the Dakota at 5,376 ft., reported 17 ft. of sand, and ran drill-stem test at 5,400 ft., total depth. The first test recovered 5,300 ft. of oil and water in 55 minutes. The second test got 60 ft. of oil-cut mud and 5,000 ft. of fresh water. Pipe will be run and perforated carefully to pick the producing zone.

Meantime the west side of the basin came to life with a bang, when Continental Oil Co. registered what looks like an important strike, only a short distance north of Salt Creek field. The test, 1 Cowles, NW NW SE 17-42n-78w, Johnson County (also known as the Sussex Unit); topped the Lakota sand at 7,689 ft., ran a drill-stem test at 7,693-7,726 ft. (total depth), and recovered 2,000 ft. of 36°-gravity oil in 20 minutes. This strike was drilled on a seismic high, and found the Wall Creek sands (Frontier) about 800 ft. higher than expected. However, these sands, the big producers at Salt Creek, failed to show anything; the First Wall Creek at 6,358 ft. top, was tight and yielded only 70 ft. of mud on drill-stem test; the Second Wall Creek, topped at 6,717 ft., on drill-stem test, yielded 930 ft. of water in 30 minutes.

For years Salt Creek has stood alone, something of an outstanding exception to the rule that oil fields tend to occur in clusters or groups. Perhaps this condition will now disappear. Certainly the speed with which other companies are reported to be moving in, checking, and preparing to test other possible structures on the west rim, north of the Continental strike, would indicate a lot of exploration men think so.

(For previous discussions of the Powder River basin, see The Oil and Gas Journal, March 8, 1947, page 113; March 29, 1947, page 191; November 1, 1947, page 105; November 8, 1947, page 107; and January 5, 1948, page 111.)

HIGHLIGHTS OF WEEK'S DEVELOPMENTS

ROCKY MOUNTAIN AREA.—British American Oil Producing Co.'s Longs Creek, Wyoming, wildcat found saturation in the Tensleep, after commercial indications from the Embar, and will apparently be a new discovery. At Pilot Butte, Fremont County, Wyoming, Brinkerhoff Drilling Co. has extended the field ½ mile east of production in the Tensleep, and faulted conditions indicate the well may open a new pool. Bay Petroleum Corp. has still not completed tests in the Lodgepole discovery, Weston County, Wyoming, and Continental is now swabbing for completion on its Taylor Sussex wildcat, Johnson County.

WEST TEXAS.—A possible second pay zone in the Pennsylvanian is indicated at Republic Natural Gas Co.'s wildcat 2 miles north of the Benedum field in Upton County. Oil returned with the drilling mud and gas pressure made it necessary to pump additional mud into the hole. Reports said the pits had a 1-in. oil covering from the limestone section drilled at 10,158-174 ft. Sun Oil Co.'s Scurry County wildcat completed its third successful drill-stem test in Canyon limestone of the Pennsylvanian, recovering pipe line oil on all three tests.

EAST TEXAS.—Since the discovery of upper Glen Rose limestone production in Humble's 1-C Pickering, Shelby County, Hiawatha Oil & Gas Co. is planning to reenter its 2 Pickering in southeastern Shelby County, 5½ miles southeast of Patroon.

ARKANSAS.—McAlester Fuel Co.'s wildcat in Columbia County, about 5 miles west of production in the Stephens field, is a prospective producer in the Smackover. A drill-stem test recovered 540 ft. of clean oil, with some salt water.

SOUTH LOUISIANA.—The second well in the world to produce below 14,000 ft., and the state's deepest producer, has been completed by Shell Oil Co., Inc., at their B-2 Smith-State Unit, 18-14s-7e, Weeks Island field, Iberia Parish. Production is through perforations at 14,015-018 ft., 14,022-26 ft., and 14,030-040 ft. with top of sand at 14,015 ft. Total depth is 14,704 ft. On initial production it flowed 438 bbl. of 33°-gravity oil per day through an 11/64-in. choke with tubing pressure at 2,400 psi.

TEXAS GULF COAST.—Potential has been run on Sohio Petroleum Co.'s discovery well 3 miles northeast of the Lane City pool production which flowed 206 bbl. of 25.9°-gravity oil per day through a 10/64-in. choke, with no water in the flow. Total depth is 6,282 ft., and production is through perforations at 5,464-78 ft.

LA.-ARK.

Two Louisiana Prospects May Make Producers

SHREVEPORT.—In Natchitoches Parish, 15 miles southwest of Colfax, Victor P. Grage et al 1 W. D. Ambrose, in irregular Section 10-5n-6w, stopped at 6,802 ft., still in the Wilcox topped at 3,292 ft. Perforations at 5,792-96 ft. tested dry, but a second set from 5,794-97 ft. returned an estimated 150 bbl. of fluid daily on 12/64-in. tubing choke, being about 20 per cent oil and the balance salt water. Tubing pressure was 100 psi., while casing pressure ran to 250 psi. Perforations were squeezed and it was waiting on cement. Operators believed the oil sand to be from 5,792-5,800 ft., and the salt water to be coming from a sand from 5,800-23 ft.

Newton Oil Co. 1 D. G. Nale, new wildcat operation in 30-23n-1e, 4 miles north of the Ora field, had prospects of oil in the Nacatoch sand topped at 2,206 ft. and drilled to 2,246 ft. Cores from 2,209-17 ft. recovered some silty, shaly porous sand with oil stains and odor. Operators ran electric log to 2,214 ft., then perforated from 2,208-14 ft., after which it flowed an estimated 250 bbl. of fluid a day on open 2-in. tubing, testing 35 per cent oil and the balance salt water.

In Webster Parish, Hunt Oil Co. 1 A. C. Burns, 16-23n-9w, was drilling in the Smackover below 12,347 ft. No shows have been reported. Barnsdall Oil Co. 1 Robert Sykes, projected 11,500-ft. test in 1-22n-9w, was drilling in anhydrite at 4,520 ft. It cored a porous sand with good oil stain and odor from 2,767-79 ft. Stanolind and Continental's 1 Viola Mitchell Unit, 11,700-ft. test in the shallow Shongaloo field, was drilling the Cotton Valley at 8,556 ft. Cores from 8,307-13 ft. recovered 4½ ft. of fine, slight to nonporous sand with faint distillate odor, and 1½ ft. of white nonporous sand with no shows. Cores from 8,313-21 ft. recovered 7 ft. of fine slightly porous sand with faint distillate odor.

On the southeast edge of the Packton salt dome, Winn Parish, H. L. Hunt and Nebo Oil Co., Inc., 141-F Nebo, 28-10n-2w, set 10¾-in. casing to 1,270 ft. on a new 7,000-ft. wildcat test. Location is on a subsurface and seismograph prospect.

Operations were under way again at H. L. Hunt et al 2 Louisiana Delta Hardwood Lumber Co., 1-4n-4e, LaSalle Parish, after being shut in since last spring by high water. Roads in have been finished and drilling is below 8,867 ft. in shale and lime of the upper Cretaceous. It was previously shut down at 8,411 ft.

A number of new wildcats are drilling in Arkansas. Five miles north of Gurdon, in Clark County, Lee & Burnett 1-A Sid Williams, 6-9s-20w, was below 1,526 ft. on a 3,000-ft. test. Nine miles southeast of Gurdon, Renwar Oil Corp. 1 Cabe was dry at 1,450 ft. A drill-stem test from 618-25 ft. recovered fresh water. Six miles east of Arkadelphia, J. H. Williams 1 Hunnicutt, 27-7s-18w, ran electric log to 1,756 ft. and was waiting on orders. It is a 2,500-ft. test.

In Columbia County, McAlester Fuel Co. 1-A W. D. Black, 24-15s-21w, had total depth at 6,541 ft. in the Smackover. According to driller's tops, it entered the Smackover at 6,527 ft. and had porosity at 6,532 ft. Cores from 6,534-39 ft. recovered 1 ft., of which 7 in. was lime with odor and stain of oil. A drill-stem test from 6,531-39 ft., using ¼-in. chokes and open 6 minutes, recovered 540 ft. of oil and gas-cut mud. A second test from 6,533-39 ft., open 42 minutes, produced a fair gas blow and recovered 540 ft. of clean oil, plus 120 ft. of salt water. There was no working pressure.

In Union County, Carter Oil Co. 1 Pepper, 15-19s-15w, had slight show of oil in drill cuttings from 5,930-34 ft., but a drill-stem test from 5,924-39 ft., open 1½ hours, recovered 30 ft. of mud with no shows. It was drilling ahead below 6,038 ft.

NORTH LOUISIANA WILDCAT FAILURE

DeSoto Parish: Kerr-McGee Oil Industries, Inc., 1 Nabors-Rives, SW SW SE 30-12n-13w, dry, TD 6,838 ft., annona 1,580 ft., base Austin chalk 2,615 ft., Paluxy 2,830 ft., Massive anhydrite 4,783-4,997 ft., James 5,585 ft., Pine Island 5,835 ft., Sligo 5,976 ft., Travis Peak 6,685 ft., elev. 322 ft.

ARKANSAS WILDCAT FAILURE

Clark County: Renwar Oil Corp. 1 H. C. Cabe, NW NE NE 34-10s-19w, dry, TD 1,450 ft., Arkadelphia 491 ft., Nacatoch 645 ft., Saratoga 885 ft., base annona 1,902 ft., Travis Peak 1,270 ft., Smackover 1,410 ft., elev. 200 ft.

SOUTH LOUISIANA

Louisiana's Deepest Well Brought in by Shell

NEW ORLEANS.—The deepest oil production in Louisiana has been opened at Weeks Island field, Iberia Parish, by Shell Oil Co., Inc., B-2 Smith-State Unit, 18-14s-7e, which flowed 438 bbl. of 33°-gravity oil per day through an 11/64-in. choke with tubing pressure at 2,400 psi. Gas-oil ratio 1,155. Total depth is 14,704 ft., with 7-in. casing set at 14,225 ft., 5-in. liner set from 14,158-14,639 ft. Production is through perforations at 14,015-18 ft., 14,022-26 ft., and 14,030-40 ft. with top of sand at 14,015 ft. Pure Oil Co.'s well in the Wind River Valley area, Wyoming, produces from 14,309 ft., and is the world's deepest.

Sun Oil Co. 1 Leger has opened a new pay sand in South Crowley area, Acadia Parish. Located in 22-10s-1e, the well was drilled to a total depth of 11,514 ft., and on potential test flowed 252 bbl. of 35.7°-gravity oil per day through a 3/16-in. choke, with flowing pressure on the tubing at 2,200 psi. Production is through perforations at 8,144-56 ft.

Shell Oil Co., Inc., 2 Dugas & Leblanc, Ltd., opened new oil sand at Napoleonville, northwest flank, 35-12s-13e. On potential test it flowed 268 bbl. of oil per day through an 8/64-in. choke, gas-oil ratio 690, tubing pressure 1,690 psi., casing pressure 1,750 psi., gravity 35°. Total depth is 10,587 ft., and production is through perforations at 9,845-56 ft.

The Atlantic Refining Co. C-1 Newport Industries, Inc., is a potential oil discovery, Section 7-5s-11w, 1 mile east of the Bivens field in Beauregard Parish. Total depth is 7,775 ft. The 5½-in. casing was cemented at 7,374 ft., and the well was reported flowing approximately 5½ bbl. of oil per hour on initial test through perforations at 7,260 ft.

The 16 new locations reported this week include 3 wildcat starts, 1 each in Acadia, Cameron, and Jefferson parishes. Two successful exploratory tests were reported this week, opening two new oil sands, one each in Napoleonville pool, Assumption Parish, and South Crowley field in Acadia Parish. Two dry wildcats were reported, one each in Acadia and Terrebonne parishes.

SOUTH LOUISIANA SUCCESSFUL WILDCAT

Assumption Parish: New oil sand, Napoleonville pool—Shell Oil Co., Inc., 2 Dugas & Leblanc, Ltd., 35-12s-13e, on NW flank of Dome, TD 10,587 ft., TD ST hole 9,950 ft., top sand 9,845 ft., perf. 9,845-56 ft., IP: 268 bbl. oil per day through 8/64-in. choke, GOR 690, TP 1,690 psi., CP 1,750 psi., gravity 35°, no water.

Acadia Parish: New oil sand, South Crowley field—Sun Oil Co. 1 Leger, 22-10s-1e, TD 11,514 ft., top sand 8,144 ft., perf. 8,144-56 ft., IP: 252 bbl. oil per day through 3/16-in. choke, GOR 4,841, TP 2,200 psi., gravity 25.7°, no water.

SOUTH LOUISIANA WILDCAT FAILURES

Acadia Parish: Sun & Superior 1 Prejean Unit 1, in South Bosco area, 3-9s-3e, 1 mi. S of Bosco field production, dry, TD 11,520 ft.

Terrebonne Parish: Union Oil Co. of Calif. 2-8 State-LLE, 21-21s-14e, East Bay Junop Prospect, dry, TD 7,890 ft.

SOUTHWEST TEXAS

New Well Being Completed On Lamar Peninsula

CORPUS CHRISTI.—Sullivan & Garnett 1 George E. Shelly et al, wildcat test near the old Lamar field and approximately ½ mile east of the Lamar townsite, on the south end of the Lamar Peninsula, in Aransas County, is preparing to complete for a new oil discovery after drill-stem test through perforations at 7,286-94 ft. had developed 60 psi. working pressure in 20 minutes, and recovered 33 stands of pipe-line oil. It is reported the well flowed at the rate of 72 bbl. of oil per day. Total depth is 7,625 ft., with 7-in. casing set to 7,607 ft. This well is in Tract 2 out of Reserve "D" Survey.

Henderson Coquat 2 H. A. Dillon, wildcat test in southern Dimmit County, approximately 4 miles southwest of Catarina, recovered 30 ft. of saturated oil sand on cores at 4,900-32 ft. On a drill-stem test at 4,916-37 ft., open 30 minutes, recovered 50 ft. of oil-cut mud and 3 gal. of clean oil, bottom-hole pressure 640 psi., open, and 710 psi. closed. The hole has been plugged back from total depth of 5,210 ft. to 4,932 ft. and operators are preparing to set casing for production test in open hole at 4,900-32 ft.

Two new pay sands are being opened at Jay Simmons field or northeastern Starr County by Sunray Oil Corp. 1 Garcia. Dual completion is being made through perforations at 6,192-6,202 ft. and 6,134-48 ft., both of which are in new pay sands for the field. Both perforations flowed oil on initial tests. Operators are waiting on potential gage.

There were 25 new locations reported for Districts 1 and 4, with 6 of these being wildcat starts, 1 each in Bastrop, Caldwell, McMullen, Milam, Starr, and Webb counties. One wildcat was successful, opening a new gas-condensate pool in Nueces County, and five were dry, two in Duval, and one each in Jim Wells, Starr and Zapata counties.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) SUCCESSFUL WILDCAT

Nueces County: New gas-condensate field—Skelly Oil Co. 1 Richard King in Sec. 27, Richard King Farm Lots, ¼ mi. NW of Agua Dulce townsite, 3 mi. W of Agua Dulce field and 2 mi. S of Richard King field, TD 6,213 ft., top sand 5,432 ft., perf. 5,432-50 ft., IP: 8,500,000 cu. ft. gas per day on open flow, plus condensate, shut-in pressure 2,180 psi., no water.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) WILDCAT FAILURES

Duval County: Gravis & Mitchell 2 J. F. Waelder, in Nathaniel Tinsley Sur. 103, 7 mi. NE of Freer, dry, TD 3,524 ft.

Taylor Refg. Co. 1 M. Garcia, in Sur. 145, 9 mi. NW of San Diego, dry, TD 6,415 ft.

Jim Wells County: W. R. Quin and H. J. Mosser 2 Charles Mull, in L. C. Collins Farm Lots, 14 mi. SW of Alice, 1 mi. SW of Alice field, dry, TD 5,608 ft.

Starr County: Wm. Herbert Hunt Trust Est. 1 Francisco Alverado, in Francisco Alverado Sur. 550, 21 mi. NE of Rio Grande City, or approx. 1¼ mi. NE of Yzaguirre field and 2¼ mi. SE of North Rincon field, dry, TD 5,003 ft.

Zapata County: Rodney De Lange 1 M. Garza Est. fee, in GB&CNG Sur. 149, 5 mi. SW of Escobas, dry, TD 2,540 ft.

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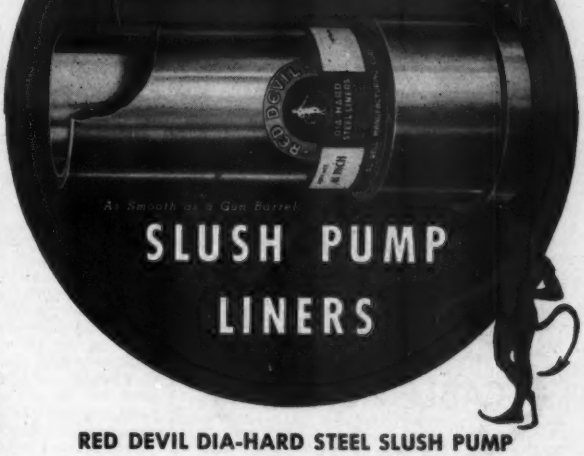

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N. CENTRAL TEXAS

Chico Northwest Offset May Be Biggest Producer

WICHITA FALLS.—Cities Service Oil Co. 1 R. O. Garrett, northwest offset to the Chico conglomerate discovery in Wise County, had prospects of becoming the field's largest producer. Seven-inch casing was set at 5,288 ft., and when plug was drilled and the conglomerate acidized from 5,228-80 ft., total depth, the initial production was 1½ bbl. of oil an hour. However, a second acid treatment resulted in a flow of 22 bbl. of oil the first hour through ¾-in. choke, 32 bbl. the second hour, and 21 bbl. the third hour through 20/64-in. choke. Cities Service 1 Sealy, south offset in Section 3, was drilling ahead in shale below 4,126 ft.

In northern Parker County, 1½ miles northeast of the town of Poolville, Venture Oil Co. 1 Culwell, J. M. Mora Survey, was reported showing oil in the Ellenburger, topped at 6,161 ft., by samples. Saturated zones were reported at 6,345-65, 6,390-6,414 and 6,436-54 ft., total depth, with some free oil being bailed from the third saturated section. The well previously reported a good gas show from the Kickapoo limestone of the Strawn, from 3,810-20 ft.

G. E. Kadane & Sons 1 Humphrey, E. Heath Survey, 4½ miles northeast of Dundee in Archer County, reported a small show of oil in the Ellenburger. A 1-hour drill-stem test from top of the Ellenburger at 4,870 ft. to 4,981 ft., total depth, recovered 60 ft. of oil-cut mud. Bottom-hole pressure was 150 psi. in 15 minutes. Operators continued drilling below 4,911 ft.

Five miles northwest of Windthorst, Akin & Dimock 1 Kinder, Lot 111, Block 4, Clark & Plumb Survey, made an unsuccessful drill-stem test to 5,118 ft., 2 ft. in the Caddo, and continued drilling below 5,120 ft.

A 1-mile northeast extension to Odell Canyon Limestone field of northwestern Wilbarger County was indicated at National Associated Petroleum Co. 1 Douglass, Section 3, Block 10, H&TC Survey. Acid treatment of 500 gal. through perforations from 4,741-45 ft. resulted in swabbing 5 bbl. of oil an hour. Total depth is 6,836 ft., in the Ellenburger, with casing set on bottom.

In Throckmorton County, Deep Rock Oil Corp. 1 Nannie Wright, 2¾ miles southwest of Throckmorton, ran a drill-stem test of the Caddo at 4,356-62 ft. Gas showed in 7 minutes and recovery was 1,020 ft. of oil-cut mud. Operators said the packer leaked and prevented a successful test.

A ¾-mile southwest extension to Strawn sand production in the Manning-Parrott field was indicated at Lester & Duffield 1 Odom, Block 964, TE&L Survey. The sand was topped at 2,553 ft. and drilled to 2,570 ft. A 2-hour drill-stem test brought gas to the surface in 28 minutes and recovered 1,800 ft. of oil. The bottom 120 ft. was said to be salty. Bottom-hole pressure built up to 1,500 psi. in 15 minutes. Operators set 7-in. casing on bottom to test further.

Warren Oil Corp. 1 Hill-Allen, Raymond Sanchez Survey, northwestern Throckmorton County wildcat, was drilling below 4,642 ft.

New locations in the North Texas areas, District 9, totaled 32 in proven fields and 18 wildcats. Wildcat locations, by counties, were: Cooke 6, Montague 5, Archer 4, Wichita 2 and Jack 1; field locations were: Young 12, Wichita 6, Archer and Cooke 5 each, Montague 3, and Jack 1. Completions for week in the same area, were: 24 oil wells, 1 gas well, and 27 dry holes. The total included 2 completed discoveries and 11 wildcat failures.

In West Central Texas, District 7-B, 15 wildcat locations were made, while pool wells gained 19. Wildcats, by counties, were: Throckmorton and Jones three each, Coleman and Stephens two each; one each in Brown, Comanche, Eastland, Mills and Taylor. Field locations were distributed in: Comanche six, Shackelford four, Eastland and Fisher two each, and one each for Callahan, Coleman, Palo Pinto, Throckmorton, and Stephens. Week's completions were 15 oil wells, 1 gas well, and 15 dry holes, including 1 wildcat oil well and 10 wildcat failures.

NORTH CENTRAL TEXAS (DISTRICTS 9 & 7-B) SUCCESSFUL WILDCATS

Archer County: L. T. Burns 1 G & C Prideaux, Sec. 1,835, TE&L Sur., 8 mi. SW Windthorst, pumped 125 bbl. 42°-gravity oil a day, oil sand 3,168-75 ft., TD 3,178 ft.

Jones County: Danciger Oil & Refining Co. 1 R. L. Stephenson, M. Fragosa Sur., 3¼ mi. NE Noodle, pumped 71 bbl. 37.5°-gravity oil a day, Flippen sand 2,527-35 ft., TD 2,936 ft.

Young County: American Republics Corp. 1 R. B. Jones, Sec. 1,648, TE&L Sur., 3½ mi. W Murray, flowed 174 bbl. 41°-gravity oil a day, ½-in. choke, Caddo 3,728-36 ft., TD 3,829 ft., tubing pressure 500 psi., GOR 890 cu. ft.

NORTH CENTRAL TEXAS (DISTRICTS 9 & 7-B) WILDCAT FAILURES

Archer County: W. B. Hamilton 1 Prideaux & Fleming, Blk. 141, J. W. Harris Subd., Jose Ostane Sur., 3 mi. N Archer City, dry, TD 1,445 ft., Gunsight lime 1,382-83 ft.

Callahan County: Star Oil Co. 1 W. T. McClure, Sec. 4, Blk. 5, SPRR Sur., 6 mi. S Putnam, dry, TD 4,340 ft., Caddo 3,162 ft., Barnett shale 3,966 ft., Ellenburger 4,092 ft., elev. 1,851 ft.

Clay County: F. A. Gillispie & Sons 1 J. B. Dunn, R. R. Brown Sur., 5 mi. N Byers, dry, TD 1,525 ft.

Comanche County: F. T. Brahaney 1 T. L. Hutchinson, T. L. Hutchinson Sur., 4 mi. NW Comanche, dry, TD 2,729 ft., Ellenburger 2,677 ft.

Cooke County: Harvey Drilling Co. 1 Carpier, Wm. Slingland Sur., 6 mi. SE Gainesville, dry, TD 2,000 ft. in shale and sand.

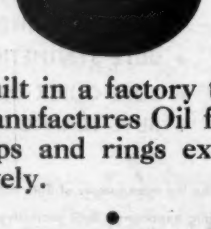
Sussex Oil Co. 1 J. W. Davidson, C. F. Stanley Sur., 4 mi. W Marysville, dry, TD 1,501 ft., sand with oil show 1,119-20 ft.

Fisher County: R. J. Carraway 1 Pike Hall, G. W. Peck Sur., 5 mi. E Eskota, dry, TD 5,200 ft., sand 3,398 ft.

General Crude Oil Co. 1 L. L. Huddlewton, Sec. 5, Blk. 1, HT&B Sur., 4½ mi. S Sylvester, dry, TD 5,950 ft., Noodle Creek 2,875 ft., Flippen 3,125 ft.

Montague County: Gus Blakely and L. B. Hapgood 1 Gus Blakely, Samuel Little Sur., 10 mi. NE Nocona, dry, TD 921 ft., sand with oil show 226-37 ft.

R. C. Lipscomb 1 R. C. Miller, J. W. Carter Sur., 3 mi. NE Bonita, dry, TD 4,305



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ft., gas sand 3,112-20 ft., pre-Cambrian 4,256 ft., Cambrian 4,301 ft.

Stephens County: A. R. Dillard 2 O. A. Daniel, Sec. 1,283, TE&L Sur., 8 mi. NW Breckenridge, dry, TD 4,591 ft., Palo Pinto 1,582 ft., Caddo 3,312 ft., Mississippi 4,385 ft., Ellenburger dolomite 4,489 ft.

Edwards Bros. 1 M. O. Kennedy, Sec. 1,061, TE&L Sur., 2½ mi. E Ivan, dry, TD 4,120 ft., Palo Pinto 1,010 ft., Caddo 3,315 ft.

Taylor County: Twin Oil Corp. 1 City of Abilene, Sec. 81, E. Anderson Sur., 3 mi. NE Abilene, dry, TD 3,450 ft., Palo Pinto 3,423 ft.

Throckmorton County: Bridwell Oil Co. 5 Joe F. Cook, L. Miear Sur., 10 mi. W Woodson, dry, TD 1,650 ft.

Bridwell Oil Co. 4 J. C. Irwin, Samuel Huddleston Sur., 9 mi. W Woodson, dry, TD 881 ft.

James H. Snowden 1 Sam Bird, Sec. 2, TTRR Sur., 2 mi. SE Throckmorton, dry, TD 2,565 ft.

Young County: Burk Roy Co. 1 B. J. Hulse, Sec. 762, TE&L Sur., 3½ mi. N Profitt, dry, TD 4,889 ft., Caddo 4,150 ft., conglomerate 4,250 ft., Marble Falls 4,529 ft., Barnett 4,598 ft., Mississippi 4,672 ft.

Hanlon Boyle, Inc., et al 1 V. Holcomb, R. J. Fisher Sur., 6½ mi. W Graham, dry, TD 4,751 ft., Caddo 3,798 ft., Mississippi 4,560 ft., Ellenburger 4,684 ft., elev. 1,136 ft.

Nu Enamel Oil Corp. 1 J. E. Morrison, H. Hodges Sur., 5 mi. S Murray, dry, TD 3,750 ft., Palo Pinto 1,725 ft., Caddo 3,570 ft.

Perkins Prothro 1 Perkins "A," Sec. 2,931, TE&L Sur., 10 mi. W Graham, dry, TD 4,640 ft., Caddo 3,750 ft., Marble Falls 4,239 ft., bailed some dead oil.

CALIFORNIA

Kettleman Well May Show New Deep Producing Zone

LOS ANGELES.—The California oil industry was full of speculation during the past week as to whether Standard Oil Co. of California had discovered a new deep producing zone on the South Dome at Kettleman Hills. Standard has drilled its wildcat there, the 4-2 S.F. & F.L., 12-25s-19e, as a tight hole and practically no information has been released.

Scout reports from the San Joaquin Valley, however, indicate that the well started to flow 35°-gravity oil while a fishing job was in progress. The flow was not particularly heavy according to the reports, but was sufficient to push the mud from the hole and put a considerable amount of crude in the pits.

The 4-2 S.F. & F. L. had reached a total depth of 12,930 ft. when drill pipe became stuck. While a fishing job was in progress to loosen the pipe, the well started flowing. Since 9⅝-in. casing has been set at 9,396 ft., all the upper horizons which are known to contain oil had been cased off. This would indicate that the oil is coming from a new deep zone for the area.

Many of the operators in the Valley are reluctant to become excited about the well. They point out that many horizons in the area contain oil and water together, thus making it impossible to produce the oil commercially. There are also operators in the area who think that Standard has made an important new discovery.

Standard, meanwhile, continues to keep quiet about the well. It has reported that a magnatector run to determine the lowest free point of the stuck pipe would not go to below 7,950 ft. due to the heavy mud in the hole. In an effort to remedy this condition, tubing has been run and the mud thinned with water to a depth of 11,000 ft. The company has also announced that while these remedial measures were under way the well attempted to blow out

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but was controlled by pumping in more heavy mud.

Trico Oil & Gas Co.'s second well in the Petaluma area of Sonoma County is nearing completion. Located a short distance south of the discovery well, and first oil producer in the county, the company's 2 Petaluma Comm. 5, 30-5n-6w, has set casing at 1,203 ft. and is ready to undergo production tests. Total depth of the well is 1,206 ft., which is still in the oil sand. The original discovery well was completed as a 32-bbl. producer, but indications to date are that the present venture will be a much larger well.

General Petroleum Corp. has added several productive acres to the Lawndale with the completion of its extension test, the 1 Powell, 21-3s-14w. With 7-in. casing cemented at 8,025 ft., perforations were made at 8,005 ft., and the well came in flowing by heads at the rate of 100 to 110 bbl. daily. Water and mud cut is reportedly running about 25 per cent. Drilled to a total depth of 8,066 ft., the well was cleaned out to a depth of 8,010 ft. following cementing of casing.

CALIFORNIA SUCCESSFUL WILDCAT

Kern County, Fruitvale area: Lebow & McNee 3 KCL-Stockdale, 34-29s-28e, pumped 170 bbl. daily, gravity 25.0°, water cut 25.0 per cent, elev. unknown, TD 5,721 ft.

CALIFORNIA WILDCAT FAILURES

Glenn County, Afton area: Richfield Oil Corp. 1 Afton Comm., 2-18n-1w, dry, elev. 85 ft., Base Tehama 1,711 ft., Cretaceous 2,212 ft., TD 2,850 ft.

Fresno County, Cantua Creek area: Pacific-Western Oil Corp. B-65 White, 11-16s-15e, dry, elev. 319 ft., TD 7,800 ft.

Kern County, Edison area: J. Paul Getty 2 J. A. C., 8-30s-29e, dry, elev. 487 ft., Jeppi sand 3,205 ft., Santa Margarita 3,345 ft., TD 3,359 ft.

Jasmine area: Mayflower Oil Co. 1 J.O.L., 23-25s-27e, dry, elev. 800 ft., TD 2,828 ft.

Kern Bluff area: Seaboard Oil Co. 8 von Glahn, 16-29s-28e, dry, elev. 727 ft., "D" zone 1,405 ft., China zone 1,502 ft., TD 1,666 ft.

McKittrick area: Independent Exploration Co. 64 Bowles, 17-29s-21e, dry, "54-21" sand 1,489 ft., Carneros 3,930 ft., TD 4,298 ft.

Mount Poso area: Independent Exploration Co. 1 KCL, 16-26s-28e, dry, elev. 962 ft., Vedder 1,075 ft., oil sand 1,079-82 ft., TD 1,101 ft.

M & S Oil Co. 1 Well, 15-26s-28e, dry, elev. 1,000 ft., TD 1,030 ft.

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MICHIGAN

Superior Discovery Seen As New West State Field

SAGINAW.—Discovery of the second western Michigan oil field in 2 months was indicated last week as Superior Oil Co. brought in its 1 Sippy in Section 28, Eden Township, Mason County, for 40 bbl. per hour. Production is from the Traverse at 1,692 ft.

The discovery is about 5 miles east, 2 miles north of the new Pentwater field, which now has a half-dozen producers and three others in completion stages. It was Superior's second well in an area in which it controls most of the acreage. The first completion, ½ mile southwest of the discovery, was a dry hole.

The Mason County wildcat and three good producers in other fields featured another week of stepped-up activity that resulted in 24 completions for 7 oil producers, 7 gas wells and 10 dry holes, 5 of which were wildcat failures. Two of the gas wells were wildcats, one in New Haven Township, Gratiot County, the other in Port Huron Township, St. Clair County. Sixteen new locations in 10 counties were announced.

New producers included a well with 1,700 bbl. per day potential in Arenac County's Deep River field; a 1,200-bbl. well in Weare Township, Oceana County; and a 500-bbl. Dundee producer in Newaygo's Garfield pool drilled by Sun Oil Co. and plugged back to 2,335 ft. after unsuccessful deep-testing to the St. Peter at 6,689 ft. Contributing about 200 bbl. initial potential were the smaller producers, one each in Allegan, Berrien, Midland and Tuscola counties. Four of the gas wells are in Clare County, one in Oceana.

Five of the new locations are in Allegan County, two each in Crawford and Oceana, one each in Gladwin, St. Clair, Saginaw, Kalkaska, Van Buren and Arenac counties.

Oil and Gas Association of Michigan, in its monthly production report, said the daily average from 3,479 wells was 41,861 bbl., compared with 3,492 wells and 43,755 bbl. for the previous month.

MICHIGAN SUCCESSFUL WILDCATS

Gratiot County, New Haven Township: Harper & Turner Oil Co. 1 Gallagher, Rudd and MacLaren, N½ S½ SE 23-10n-4w, gas well, 998,000 cu. ft., TD 1,002 ft.

St. Clair County, Port Huron Township: Kwith E. Brooks 1 K. Brooks, NE SW SW 3-6n-17e, Dundee gas well, 500,000 cu. ft., TD 695 ft., plugged back to 545 ft.

MICHIGAN WILDCAT FAILURES

Bay County, Gibson Township: Walhalla Oil Co. 1 Frederick Doerre, SE SW SE 33-18n-3e, dry in Dundee, TD 3,111 ft.

Lake County, Yates Township: Byron MacCallum 1 State-Yates, NE NE SE 27-17n-12w, dry in Dundee, TD 3,456 ft.

Mecosta County, Grant Township: Union Development Co. 1 Oscar L. Pion, NW NW NW 20-16n-9w, dry in Detroit River, TD 3,675 ft.

Oceana County, Grant Township: Dale M.

Leonard 1 Ronald Deater, NW SW SW 13-13n-17w, dry in Dundee, TD 2,553 ft.

St. Clair County, Clyde Township: Shiawassee Deep Drilling Co. 1 Clyde, NE SE NE 20-7n-16e, dry in Dundee, TD 917 ft.

TEXAS GULF COAST

Discovery Well Opened in Lane City Townsite

HOUSTON.—In the Lane City townsite, Wharton County, Sohio Petroleum Co. 1 Lane City Townsite Unit, discovery well, flowed a potential of 206.91 bbl. of 25.9°-gravity oil through a 10/64-in. choke, with flowing pressure on the tubing at 1,000 psi. Total depth 6,282 ft. with top of sand at 5,464 ft., perforations at 5,464-78 ft.

A new oil-producing area 1 mile off the north flank of the Orange dome, Orange County, is being opened by Placid Oil Co. 1 Winfree, in C. West Survey. Drilled to a total depth of 8,372 ft., 5½-in. production pipe was cemented in the hole and perforations made from 7,710-15 ft. and on a drill-stem test it flowed between 6 and 8 bbl. of 41°-gravity oil per hour with 900 psi. working pressure. Tubing was run and well started cleaning through 5/32-in. choke. This production is from the Lower Frio sands.

New oil production from the Cockfield sands in Harris County has been opened by Lamar Hunt Trust Estate at 1 E. L. Kuhlman, in the Fred Limseky Survey, Abstract 512, 1¼ mile northwest of Spring townsite, and approximately 8,500 ft. northwest of Spring field production. On a drill-stem test with packer at 5,847 ft., using 3/16 and ⅛-in. chokes, it recovered 1,000 ft. of water cushion and developed 525 psi. working pressure in 6 hours and 10 minutes. It flowed an estimated 70 bbl. of 36.4°-gravity pipe-line oil, gas ratio 400. Now shut in waiting on potential flow test.

A new oil pool south of production in the Lovell Lake field of Jefferson County, has been opened by James F. Morse & Co. et al 1 Wallace Talbot, in the James McNabb Survey, Block 2. Drilled to total depth of 9,511 ft., with 7-in. pipe cemented at 8,435 ft., the well is flowing an estimated 200 bbl. of oil per day through a ⅛-in. choke, gravity 38.6°. Flowing pressure on tubing 1,200 psi. Production is through perforations at 7,759-61 ft.

The 52 locations reported for Districts 2 and 3 included 13 wildcat starts, 2 each in Fort Bend and Harris, and 1 each in Bee, Calhoun, Colorado, Goliad, Lavaca, Liberty, San Jacinto and Wharton counties. Six wildcats were successful, 2 in Brazoria, and 1 each in Bee, Calhoun, Goliad, and Wharton counties. Ten wildcats were failures, three in Wharton and one each in Fort Bend, Jackson, Live Oak, Matagorda, Orange, Victoria, and Wilson counties.

TEXAS GULF COAST (DISTRICTS 2 & 3)
SUCCESSFUL WILDCATS

Bee County: New oil pool—Gasoline Prod. Corp. 1 Holzmark Est., in Thomas P. Rhodes Sur. A-397, 1 mi. SW of South Mineral field and 2 mi. SE of Yoward field, 5 mi. S of Mineral, TD 8,130 ft., top sand 8,078 ft., perf. 8,108-14 ft., IP: 108 bbl. oil per day through a 5/32-in. choke, GOR 620, TP 450 psi., CP 1,650 psi., grav. 27.6°, no water, top Slick sand 7,912 ft.

Brazoria County: New gas sand, Danbury—Humble O. & R. Co. 1 Roberson Est., H. Austin Lge. 5, A-13, TD 8,642 ft., top sand 7,971 ft., perf. 7,971-76 ft., IP: 3,053,000 cu. ft. gas per day through a ¼-in. choke, shut in, TP 3,000 psi., no water.

New oil sand, Manvel field—Salt Dome Oil Corp. et al 2 C. W. Way et ux, in Thos. Spraggins Sur. A-366, TD 5,870 ft., top sand 5,786 ft., perf. 5,786-92 ft., IP: 79 bbl. oil per day through a ¼-in.

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choke, TP 180 psi., grav. 29.1°, 60 per cent water.

Calhoun County: Gas-condensate new pay, Long Mott field—Fullerton Oil Co. and Ryan Consolidated Pet. 1 Carrie McDonald, in Miguel Castillo Grant, 1,250 ft. S-SW of operators' 1 M. F. Roemer discovery well at "Long Mott" field, 4 mi. N of Seadrift, TD 10,495 ft., top sand 9,634 ft., perf. 9,634-52 ft., IP: 4,000,000 cu. ft. gas per day and 170 bbl. per day condensate through a ¼-in. choke, GOR 23,530, TP 3,050 psi., shut-in pressure 3,600 psi., gravity 55.4°.

Goliad County: New oil pay, Gottschalt field—W. L. Goldston 1 Mary Meyer, in St. Luke de Mott Sur., A-115, ¼ mi. SW of Weesatche and approx. ¾ mi. SW of 1 Gottschalt discovery well, TD 7,880 ft., top sand 7,683 ft. in Massive Wilcox sand, perf. 7,683-89 ft., IP: 120 bbl. oil per day through a ⅛-in. choke, GOR 500, TP 875 psi., CP 1,100 psi., gravity 34.6°, no water.

Wharton County: New discovery, Lane City townsite—Sohio Pet. Co. 1 Lane City Townsite Unit, in D. D. D. Baker Sur., 3 mi. NE of Lane City production, TD 6,282 ft., top sand 5,464 ft., perf. 5,464-78 ft., IP: 207 bbl. oil per day through a 10/64-in. choke, GOR 658, TP 1,000 psi., gravity 25.9°, no water.

TEXAS GULF COAST (DISTRICTS 2 & 3) WILDCAT FAILURES

Fort Bend County: Grubb & Hawkins 1 J. G. Leveridge, in Jos. McCormich Sur., A-57, 2 mi. NW of Kendleton townsite, dry, TD 4,907 ft.

Jackson County: S. E. McDaniel and S. L. Bacarisse et al 1 L. R. Hollingsworth, in Lot 18, Hollingsworth Ranch Subd., in Eli Mercer Sur. A-54, 9½ mi. N-NW of Edna and NW of Cordele field, 1 mi. S of Morales gas field, dry, TD 5,020 ft.

Live Oak County: Henshaw Bros. 1 Joe Dunning Est., in M. B. Livlin Grant, A-21, just north of Mt. Lucas field, in SE corner of county, dry, TD 5,402 ft.

Matagorda County: Hunt Oil Co. 1 D. H. Braman et al, in John Crier Sur. A-19, 6½ mi. NW of Bay City, dry, TD 8,744 ft.

Orange County: Gulf Oil Corp. 3 Miller-Vidor Land Co. et al, in J. M. Swishter Sur. 2, A-316, in North Vidor area, dry, TD 8,004 ft.

Victoria County: Quintana Petr. Corp. 1 Henderson Pickering, in Henderson & Pickering Subd., SA&MG Sur. 72, A-383, 3 mi. NW of Placedo and 1½ mi. SE of Dacosta, dry, TD 7,230 ft.

Wharton County: Gulf South Oil Corp. 1 Kountze & Stewart, in P. J. Poole Sec. 8, A-615, 5 mi. E of South Hillje production, dry, TD 8,000 ft.

Placid Oil Co. 1 R. A. Rugeley, in Parker & Parks League, A-50, 5 mi. N of Lane City, dry, TD 6,711 ft.

Cockburn Oil Corp. and Hunt Oil Co. 1 Payne Stoval, in K. R. Ferris Sur., Sec. 4, A-585, 3 mi. SE of Gobbler Creek discovery, 3 mi. W of El Campo townsite, dry, TD 6,156 ft.

Wilson County: Jergins Oil Co. 1 A. C. Oefinger, in Jose de la Garza Gr., 2 mi. NW of Calaveras, dry, TD 3,485 ft.

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APPALACHIAN FIELD

29 New Locations Made In Region Last Week

PITTSBURGH. — In Malden district, Kanawha County, West Virginia, United Fuel Gas Co. topped the Clinton sand at 6,685 ft. in the wildcat 5857 A. H. Boyd or datum minus 5,626 ft. The Oriskany was logged at 5,182-5,208 ft. In Elk district, Glenn Dearth topped the Corniferous lime at 4,843 ft. from a surface elevation of 661 ft. in the test J. E. Donohue.

In Ripley district, Jackson County, Godfrey L. Cabot, Inc., topped the Oriskany sand at 5,057 ft. in 1277 G. W. Harpold and, with 146,000 cu. ft. gas showing at 5,086 ft. shut down to test casing.

In Harvey district, Mingo County, United Fuel Gas Co. completed another good well on Central Trust Co. with a gage of 1,302,000 cu. ft. gas, Brown shale, total depth 3,369 ft.

In Clay district, Ritchie County, Miller & McCullough completed 1 Theodore Dotson, good for 800,000 cu. ft. gas from the Maxton and total depth 1,833 ft.

In Oceana district, Wyoming County, United Producing Co. completed 1402 Pardee Land Co. with a final gage of 1,356,000 cu. ft. gas from the Berea (4,109-49 ft.) after shot from a total depth of 4,149 ft.

New locations totaled 29 and in Birch district, Braxton County; Center, Lee, and Sherman districts, Calhoun County; Center district, Gilmer County; Ravenswood and Union districts, Jackson County; Webster district, Marshall County; Grant district, Nicholas County; McKim and Union districts, Pleasants County; Teays Valley district, Putnam County; Marsh Fork district, Raleigh County; Grant and Union districts, Ritchie County; Grant district, Wayne County; Clay district, Wirt County; Williams district, Wood County; Oceana district, Wyoming County.

On Negro Mountain anticline in Shade Township, Somerset County, southwest Pennsylvania, Peoples Natural Gas Co. is drilling at 8,452 ft. in the wildcat on R. F. Grove farm or 592 ft. below the Tully lime. It is a rank wildcat and difficult of correlation but the top of the Onondaga lime should be expected shortly.

WEST VIRGINIA SUCCESSFUL WILDCAT

Nicholas County, Grant district: Columbian Carbon Co. 1050 C. H. Rader, 636,000

cu. ft. gas after acidizing, Big lime 1,742 ft., gas 1,897 ft., TD 2,124 ft.

WEST VIRGINIA WILDCAT FAILURE

Kanawha County, Elk district: A. C. Radford 1 P. L. Bonham, dry, elev. 938 ft., Corniferous lime 5,157 ft., Oriskany 5,284-5,364 ft., TD 5,364 ft.

EASTERN TEXAS

18 New Locations Made In East Texas Past Week

DALLAS.—R. J. Caraway 1 O. M. Walker, Jose Maria Musquez Survey, 8 miles east of Rusk in Cherokee County, was preparing to abandon at 4,460 ft. in the Woodbine. It was drilled to 4,442 ft., then cored on to total depth. At 4,451-58 ft. cores showed 2 in. of sandy shale with slight odor and taste, then 3 ft. 4 in. of porous, light broken oil sand. A 10-minute drill-stem test, with packer set at 4,444 ft., produced a fair blow throughout and recovered 240 ft. of mud slightly gas cut, and 2,540 ft. of salt water.

In Freestone County, Humble Oil & Refining Co. 1 McWatters reported first traces of free sulfur in samples from 15,425-35 ft. It was drilling ahead below 15,575 ft. in shale and lime with streaks of sand and sulfur.

In Henderson County, J. P. Owens et al 1 Mrs. Willie F. DeArmon set 5½-in. casing to 8,377 ft., total depth, and was waiting on cement.

On the north edge of the shallow Sulphur Bluff field, Hopkins County, Delta Drilling Co. et al 1 H. W. Wilson was drilling in shale and lime at 5,112 ft. It is a Smackover lime test. Five miles southeast of Sulphur Bluff, Shell Oil Co., Inc., 1 J. L. Hedrick was drilling below 2,894 ft. It will go to the Paluxy.

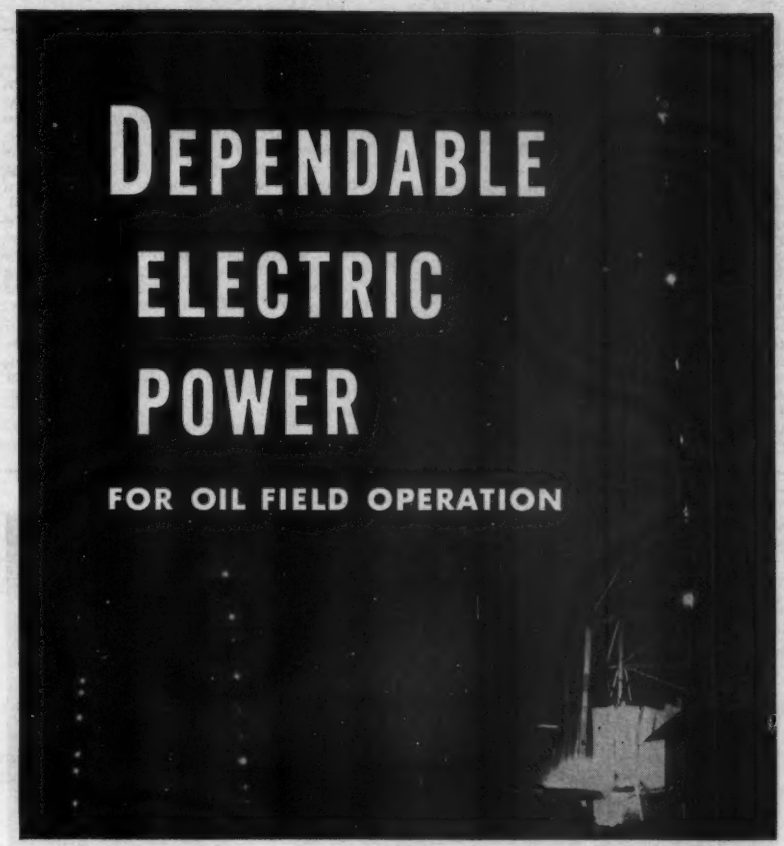
In Smith County, 1½ miles south of Flint, Humble Oil & Refining Co. 1 Kate E. Sackett estate was drilling below 8,646 ft. in shale with streaks of lime. About 1 mile northeast of Hackett, Humble's 1 Everett Wintters was shut down for repairs at 7,587 ft. in sand and shale. Cores from 7,445-58 ft. showed asphalt stain in streaks. A drill-stem test from 7,436-63 ft., open 30 minutes, recovered the water cushion, plus 50 ft. of mud with no shows.

Testing continued at T. D. Humphrey's 1 Tuggle, Kaufman County prospect, 5 miles south of Kemp. Additional perforations were made from 6,106-6,116 ft. and the section acidized. It was reported to be swabbing 47°-gravity oil, with no water, from the Bacon limestone. The amount of oil recovered was not specified.

Eighteen locations were made last week, including one wildcat in Smith County 4 miles east of Lindale on the northeast flank of the Steen salt dome. This is W. F. Nenney 1 Ione Braziel, in the Thomas Rives Survey, which was completed dry in April of this year at 7,014 ft. It will be deepened to 8,000 ft. Other new operations were: Cayuga field one, New Hope one, Opelika one, Tri Cities one, Carthage two, Henderson one, Coke two, Hawkins two, Quitman two, Yantis one, and three locations in the Alba townsite of Wood County. Week's completions were eight oil wells, three gas wells and three dry holes, including one dry wildcat.

EAST TEXAS (DISTRICTS 5 & 6) WILDCAT FAILURE

Falls County: Seaboard Oil Co. of Delaware 1 J. E. Green, Anseleno Balverdo League, 5 mi. SW Kosse, dry, TD 6,200 ft., logged Nacatoch 1,368 ft., anhydrite 5,100 ft., Pettit 5,572 ft., by samples: Austin 2,710 ft., Austin base 3,912 ft., Comanche 3,314 ft., Edwards 3,790 ft., Goodland 4,003 ft., upper Glen Rose 4,270 ft.



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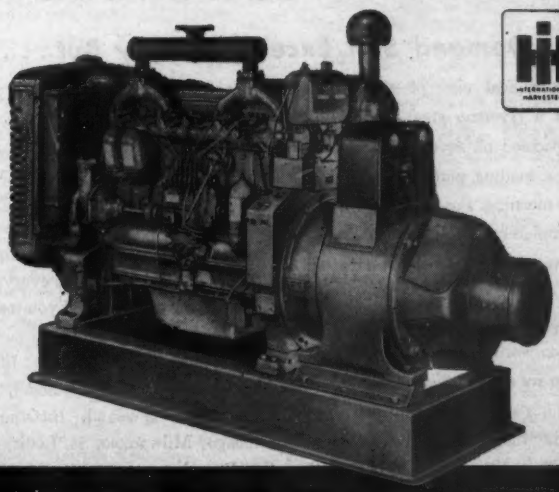

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ROCKY MOUNTAIN

New Discovery Probable In Wind River Basin

DENVER.—Saturation in the Tensleep at British American Oil Producing Co.'s wildcat in the Longs Creek area, Fremont County, Wyoming, indicates that a new discovery for this area of the Wind River Basin will soon be completed. The well is 1 Government, C NW NE 5-31n-94w, and Tensleep was topped at 5,644 ft. Saturation was logged at 5,650 ft., and on drill-stem test 5,645-85 ft., the well made 280 ft. of oil-cut mud with no water in 1 hour 55 minutes. The Tensleep sand at Sand Draw field, 4 miles northwest, is more than 500 ft. in thickness in some of the wells, and it is expected that British American will run casing to the top of the sand and drill the entire Tensleep section prior to completion.

It is believed that the well was a commercial producer in the Embar formation, topped at 5,202 ft., as saturated lime was recovered from this formation. It is also possible that mechanical failure on drill-stem test caused the well to make a poor showing in the top of the Tensleep. This well has been of regional interest as a seismic high southeast of Sand Draw field, which produces approximately 8,000 bbl. of oil daily from 7 wells in the Tensleep formation. Other Tensleep formation tests are now being drilled in the area, including Stanolind Oil & Gas Co.'s deep test of Beaver Creek field, northwest of San Draw.

An extension, and possibly a new producing area, has been established by Brinkerhoff Drilling Co.'s test of its 1 Heslin, NW SW SE 15-3n-1w (WRM) east of Pilot Butte field, Fremont County, Wyoming. This well found the Tensleep at 6,212 ft. and on drill-stem test, 6,208-37 ft., recovered 1,000 ft. of oil and no water in 1 hour. The well was cored to 6,275 ft. and on test 6,240-75 ft. the well made 1,350 ft. of 26°-gravity oil with no water in 1 hour. Bottom-hole pressure was 2,075 lb. The operator is coring ahead in the Tensleep. Tensleep has produced in Pilot Butte field proper since 1942 but limits of production had been fairly well established. It is reported that location for the Brinkerhoff test was based on faulted conditions between the well and the field proper. Successful completion of the well will extend the field ½ mile east of present production.

Bay Petroleum Corp. has still not completed tests of its discovery in the Lodgepole area, Weston County, Wyoming, at 1 Christensen-Davis, C NW SE 9-44n-66w. This well made 3,230 ft. of 42°-gravity oil on drill-stem test 6,720-28 ft. in the Dakota 2 weeks ago, but rain has made roads impassable and tanks for production tests have not been installed. The well has been estimated good for between 800 and 1,000 bbl. of oil daily, but these estimates are based on the initial drill-stem test of the formation. Meanwhile, Bay has made application with the Wyoming Public Service Commission for permit to build an $850,000, 6-in. line from the field to connections with the Rocky Mountain Pipe Line Co.'s line from Lance Creek to Denver, or if pending permits are granted for a line from Mush Creek field, 15 miles east of Lodgepole, to the Lance Creek line, Bay requests permission for a line to join the other at Mush Creek. Lease buying in the Lodgepole-Mush Creek area has intensified, with Continental Oil Co., Union Oil Co. of California, Carter Oil Co., and others acquiring acreage in the area.

Casing has been cemented by Continental Oil Co. on top of the Lakota sand at its Taylor Sussex wildcat, north of Salt Creek field, in Johnson County, Wyoming. Top of the Lakota was found at 7,698 ft. and saturation was logged at 7,710 ft. On drill-stem test a week ago the well made 2,000 ft. of 36.5°-gravity green oil and 50 ft. of oil-cut mud. The well is 1 Alice Coles, NW NW SE 17-42n-78w. Dakota was the original objective of the well but the Dakota sand was missing in the well. In the Second Wall Creek some slight saturation was found in the top of the sand but this formation tested water. The operator is now drilling plug for a test of the Lakota sand.

New locations.—A total of 30 new locations were made in the Rockies, with 20 of the wells in Wyoming, 6 in Colorado and 4 in Montana. In Wyoming British American Oil Producing Co. has made location for the first of five wells on a 40,000-acre block on the east side of the Powder River Basin, west of Mule Creek field. The well is 1 Manke, NW SW NW 35-40n-62w, Niobrara County, in Alkali Creek area, and will probably test the Dakota at around 4,500 ft. British American acquired a joint interest in this block with Superior Oil Co. of California in return for the five-well commitment. British American has also made location for a wildcat test on the Ant Hills structure at 1 Hartung, NW NW SW 23-37n-63w, Niobrara County, 20 miles south of the Alkali Creek structure. This well is to evaluate holdings of British American in this area. In the Rex Lake area, Albany County, Phillips Petroleum Co. has made location for the first test of Tensleep on the structure. The well is 1 Albany, NW SE NE 26-16n-77w, and Tensleep is expected at around 6,000 ft. In Musselshell County, Montana, William Hanlon is drilling below 500 ft. on a wildcat test at 1 Government, NW SW NW 9-10n-22e, Devils Pocket.

Completions.—Twenty wells were completed with a total daily initial of 3,520 bbl. of oil. Eleven of the wells were in Wyoming, five in Colorado and four in Montana. Included in the Wyoming completions was the Tensleep discovery at Medicine Bow by Ohio Oil Co. and the California Co. Final gage on the test was 35 bbl. of oil per hour through ⅜-in. choke. This was the second Tensleep test to be drilled on the structure, and found Tensleep 300 ft. higher structurally than the first well, ½ mile west. In the Sheep Creek area in southern Weston County, British

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RYERSON STEEL

American Oil Producing Co. abandoned its wildcat test after finding Newcastle formation dry. This well was based on possibility of trap accumulation similar to the Mush Creek field. Western Natural Gas Co. et al has skidded rig at Glade Anticline, Dolores County, Colorado, after surface casing collapsed at 335 ft., total depth. The contractor is moving in material at an offset location. Rig was also skidded at the W. D. Broadhead wildcat, Paradox structure, Montrose County, after boulders were encountered at 120 ft., total depth.

WYOMING SUCCESSFUL WILDCAT

Medicine Bow, Carbon County: Ohio and California 6 Wm. Kyle "A," NE SE NE 26-21n-79w, 6,916 TD, PB 6,860, flowed 35 BOPH ⅜-in. choke. Frontier 4,077, Muddy 4,753, Dakota 4,837, Lakota 4,895, 1st Sundance 5,180, Chugwater 6,195, Forelle 6,426, Tensleep 6,666, elev. 7,284 DF.

WYOMING WILDCAT FAILURE

Sheep Creek, Weston County: British American et al 1 Gov't., SE SE NW 22-42n-62w, 4,521 TD, abnd., Wall Creek 3,164, Greenhorn 3,395, Newcastle 4,072.

COLORADO WILDCAT FAILURES

Glade Anticline, Dolores County: Western Natural et al 1 Grade, C SE NE 28-41n-17w, 335 TD, collapsed casing, skidded rig.

Mancos, Montezuma County: M. T. Anderson 2 Day, C SW SW 11-35n-14w, 950 TD, abnd., Dakota 715, Morrison 890, elev. 6,595 ground.

Paradox, Montrose County: W. D. Broadhead 1 fee, C SW SW 20-47n-18w, 120 TD, abnd. in boulders, rig skidded.

Ridgeway, Ouray County: Miley and Pilling 1 Catt, SW SW SW 7-45n-8w, 520 TD, water in hole, abnd.

CANADIAN FIELDS

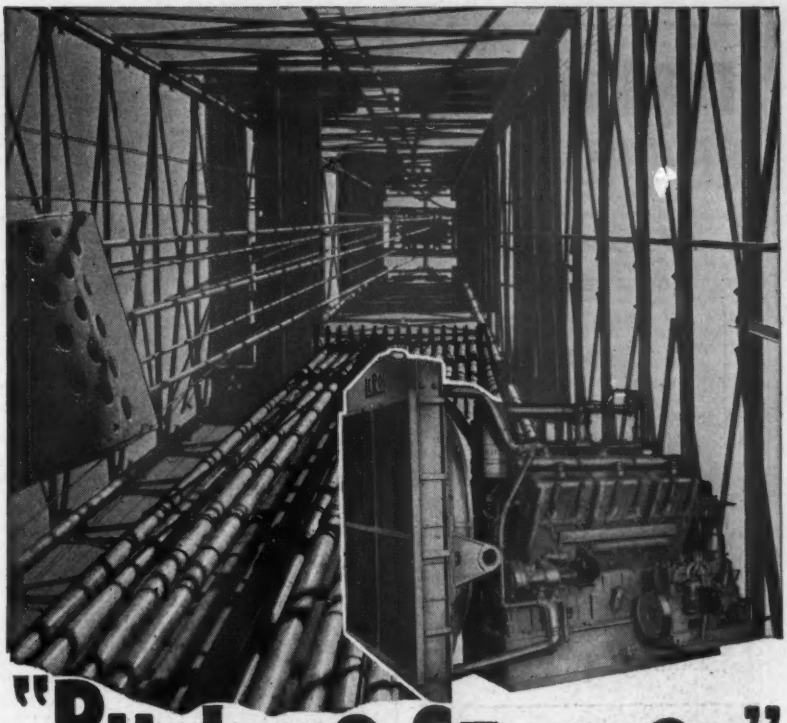
Lower Madison to Be Tested at Pincher Creek

CHATHAM. — After setting 5-in. casing, tests of the lower Madison limestone in Gulf Canadian-Pincher Creek 1, LSD 15, 24-3-29w4, will be started shortly, with the well completed at 12,516 ft. The well got the Madison originally at 11,700 ft. and drill-stem tests of the upper zone indicated 44,000,000 cu. ft. wet gas with around 1,000 bbl. distillate recovery daily. Since then the well has been cautiously deepened, encountering 280 ft. of lower lime porosity with cores showing water-free oil and gas.

Leduc.—Production from Atlantic Oils 3, LSD 12, 23-50-26w4, wild well in the Leduc field, has been holding close to the 12,000 bbl. a day to which it jumped after the initial water flooding of the formation brought it down to 7,000 bbl. Flooding has been discontinued and control efforts are concentrated on the south and west directionally drilled relief wells, which are expected to tap Atlantic 3 just above the D-3 zone late in July.

The pipe line is taking about 8,000 bbl. of the Atlantic production, the remainder being run back into the formation through Nos. 1 and 2 wells. Oil is no longer accumulating in surface pools. Investigation by the Alberta Conservation Board indicates that the entire field instead of the immediate area has contributed to the wild well's production, but that well pressures and flows have not been materially affected, indicating little damage to the field.

In the Woodbend extension, Continental-Leduc 3, LSD 12, 7-51-25w4, got oil and gas shows in the lower Cretaceous and is deepening below 4,600 ft. after contacting the Devonian. Consolidated-Homestead 2, LSD 9, 31-51-25w4, the east outpost, scheduled for abandonment at 5,500 ft., was deepened by Imperial to 5,750 ft. for geological information. After Imperial discontinued drilling, a routine survey disclosed indications which led the original company to



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deepen to 5,785 ft. for final test. It is now being abandoned.

Lloydminster.—Indications of crude oil at lower depths are reported by Husky-McLaren 1, SW4, 6-50-25w3, in the Saskatchewan section of the Lloydminster field. Drilling below the usual producing depth, cores with indications of free oil were taken below 2,214 ft., and casing has been run and perforated for production test.

In the Lone Rock area, south and east of the main field, Franco Oil & Gas 9, LSD 1, 28-47-3w3, completed last season in the Lloydminster sand at 1,919 ft. for 10 to 15 bbl., has been deepened and perforated in the Sparky sand at 1,876-80 ft., flowing 490 bbl. flush production. Put on ½-in. choke, it is making 190 bbl. of 17.8°-gravity crude, with negligible water.

Alexis Reserve.—On Alexis reserve in northern Alberta, St. Ann 1, LSD 9, 28-55-4w5, joint test by Home Oil, Anglo-Canadian and Calgary & Edmonton Corp., is below 5,900 ft. with declining hopes of getting the D-3 zone. The D-2 zone was not commercially productive, but oil indications in the top of the Devonian may lead to further drilling in the general area.

OKLAHOMA

Garvin County Has Two Prospective Pool Openers

CARTER OIL CO. has a prospective pool opener in the area southwest of Southwest Antioch field at 1 Rose Vose, C NW NE 3-2n-3w, Garvin County. On a test taken at 8,060-71 ft., the well flowed 5 bbl. per hour and gas at the rate of 750,000 cu. ft. per day. In a later drill-stem test at 8,071-86 ft. with tool open for 2 hours, gas was at the surface in 20 minutes and recovery was 2,350 ft. of oil and 300 ft. of oil-cut mud. Operator cored 8,086-8,109 ft. with recovered cores going from sand at the top to shale at the bottom. Recovery on a 2¼-hour drill-stem test at 8,086-8,110 ft. was 2,200 ft. of clean oil, 42.5° gravity.

In the area about 6½ miles to the east of the Carter well, Phillips Petroleum Co. has a promising wildcat at 1 Hillman, NW SW SW 3-2n-2w, Garvin County. Gibson sand was topped at 6,522 ft. and a core taken at 6,537-48 ft. recovered 10 ft. of porous sand with good stain and odor, and about 1 ft. of stained shaly sand. Core taken at 6,548-66 ft. was soft porous sand with good stain and odor. Core at 6,566-70 ft. recovered limy sand with stain and odor. Recovery from coring at 6,570-77 ft. was 6 ft. of fairly porous saturated sand with good stain and odor, and 5 in. of lime with stain and odor.

Continental Oil Co. continues testing at the Cleveland County wildcat 1 Maruska, SE SE SW 16-10n-4w, after acidizing the Chimney Hill section of the Hunton. Tubing was run to 8,579 ft. and production packer set at 8,465 ft. After acidizing perforations at 8,492-8,542 ft., well flowed 21 bbl. of load oil the first hour and 13 bbl. the second hour before going dead. Crew will swab in attempt to restore production. Operator will also acidize the Bois d'Arc section of the Hunton.

OKLAHOMA SUCCESSFUL WILDCAT

McClain County: Magnolia 1 Arnold, C SW SE 13-9n-4w, flowed 294 bbl. of 39°-gravity oil per day from Chimney Hill-Hunton at 8,866-8,901 ft., through ¼-in. choke, TD 9,433 ft.

OKLAHOMA WILDCAT FAILURES

Comanche County: Harper-Turner 1 Hulen, SW SW NE 17-1s-10w, dry, TD 3,502 ft., Canyon 2,645 ft.

Cooper 1 School Land, NE SE SE 36-4n-11w, dry, TD 850 ft., granite wash 590 ft.

Cotton County: Bruhm 1 Jarrett, SW SW NW 22-3s-10w, dry, TD 1,710 ft., no shows.

Turner 1 Lee, SE SW SE 11-5s-11w, dry, TD 4,437 ft., no shows.

Russell 1 Rodolph, NE NE SW 4-5s-10w, dry, TD 2,164 ft., no tops reported.

Creek County: Maguire 1 Abraham, NE NW NW 7-16n-8e, dry, TD 3,780 ft.

McIntyre 1 Hayes, NE SE SE 6-18n-8e, dry, TD 3,160 ft., Prue 2,390 ft., Verdigris 2,443 ft., Inola 2,788 ft., basal Bartlesville 2,899 ft., Dutcher lime 3,045 ft., Mississippi lime 3,095 ft.

Garfield County: H. E. R. 1 Neundort, NE NE SW 34-23n-3w, dry, TD 5,534 ft., Endicott 2,683 ft., Elgin 3,718 ft., Avant 3,808 ft., Layton 4,105 ft., Oswego 4,615 ft., Bartlesville 4,765 ft., basal Pennsylvanian chat 5,043 ft., Mississippi lime 5,135 ft., Woodford 5,410 ft., Viola 5,465 ft., Wilcox 5,513 ft.

Hughes County: Vise 1 Nicks, NE NE NE 24-9n-10e, dry, TD 3,843 ft., Gilcrease 2,501 ft., Wapanucka 2,810 ft., Union Valley 3,049 ft., Cromwell 3,075 ft., Mayes 3,520 ft., Hunton 3,746 ft.

Diehl 1 Godfrey, SE SE NW 26-8n-8e, dry, TD 3,299 ft., brown lime 2,677 ft., Booch 2,823 ft., Gilcrease sand 3,000 ft., Cromwell 3,268 ft.

Hall 1 Tiger, SW SE NW 34-8n-10e, dry, TD 631 ft.

Jackson County: Staley Bros. 1 Prater, SE SE SW 8-1s-21w, dry, TD 2,515 ft., no shows.

Kay County: British-American 1 Curfman, NE SE SE 19-28n-3e, dry, TD 3,865 ft., Big lime 3,050 ft., Oswego 3,062 ft., Red Fork 3,326 ft., Mississippi lime 3,426 ft., Woodford 3,730 ft., Simpson 3,736 ft., Simpson sand 3,746 ft., Arbuckle 3,835 ft.

Lincoln County: Atlantic 1 Shaw, SE NW NE 7-13n-2e, dry, TD 5,633 ft., Hogshooter 3,810 ft., Checkerboard 4,112 ft., conglomerate 4,376 ft., Oswego 4,702 ft., Prue 4,815 ft., Verdigris 4,877 ft., Bartlesville 5,040 ft., Woodford 5,247 ft., Hunton 5,303 ft., Sylvan 5,320 ft., Viola 5,420 ft., dense 5,454 ft., dolomite 5,488

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ft., sandy dolomite 5,497 ft., Wilcox 5,532 ft., second Wilcox 5,605 ft.

Logan County: Gulf 1 Wilkes, SW SW NW 22-17n-1e, dry, TD 5,189 ft., Pawhuska 1,790 ft., Avant 3,080 ft., Perry 3,128 ft., Hogshooter 3,616 ft., Layton 3,673 ft., Checkerboard 3,876 ft., Big lime 4,250 ft., Oswego 4,348 ft., Prue 4,427 ft., Red Fork 4,584 ft., Bartlesville 4,632 ft., Mississippi lime 4,702 ft., Woodford 4,732 ft., Hunton 4,773 ft., Sylvan 4,863 ft., Viola 4,952 ft., dolomite 4,983 ft., Wilcox 5,034 ft., sandy dolomite 5,146 ft., second Wilcox 5,166 ft.

Noble County: Warren 1 Briscoe, SE SW SW 35-22n-1w, dry, TD 5,163 ft., Pawhuska 2,125 ft., Hoover 2,178 ft., Avant 3,143 ft., Perry 3,318 ft., upper Layton 3,490 ft., middle Layton 3,614 ft., lower Layton 3,822 ft., Checkerboard 4,088 ft., Oswego 4,194 ft., Skinner 4,543 ft., Mississippi lime 4,732 ft., Woodford 4,980 ft., Viola 5,013 ft., dolomite 5,052 ft., Wilcox 5,071 ft., second Wilcox 5,136 ft.

Okfuskee County: Duncan 1 Harjo, C SE NE 22-11n-10e, dry, TD 3,870 ft.

Skelly 1 Bombarger, SW NE SE 12-13n-7e, dry, TD 4,100 ft.

Pontotoc County: Smith 1 Meyer, SW SW NE 20-4n-7e, dry, TD 1,840 ft., sand 476-570 ft., Henryetta coal 640 ft., Senora lime 696 ft., Senora sand 762-72 ft., Gilcrease sand 1,520 ft.

Stephens County: Pray 1 Gatlin, SE SE SW 7-1s-5w, dry, TD 7,011 ft.

Tillman County: Bridwell 1 Petty, NE SE SE 8-1s-19w, dry, TD 3,584 ft., Canyon 2,220 ft.

PERMIAN BASIN

Several Wells Make Good Shows in Permian Basin

MIDLAND.—A second showing of oil in the Pennsylvanian was reported at Republic Natural Gas Co. 1-E-A Rosa Halff Barnett, Upton County wildcat 2 miles north of Benedum field. A section of crinoidal limestone was penetrated from 10,158-74 ft., and at 10,174 ft., the drilling mud showing signs of gas and oil, and some free oil appeared on the pits. It was to drill another 25 ft. and run a drill-stem test. The first showing of oil in the Pennsylvanian was reported from 9,660-9,720 ft. Higher in the hole it had some oil shows in the lower Permian at 7,460-7,520 ft.

Slick-Urschel Oil Co. 1 Mary Standifer, Lot 3, Section 50½, southwest offset to the discovery in Benedum field, corrected top on the Ellenburger from 10,068 to 10,064 ft., which would make it 34 ft. lower structurally than the discovery, it was said. Total depth is 11,100 ft., corrected, and plans are to run 7-in. casing to bottom before drilling into the pay level of the discovery well.

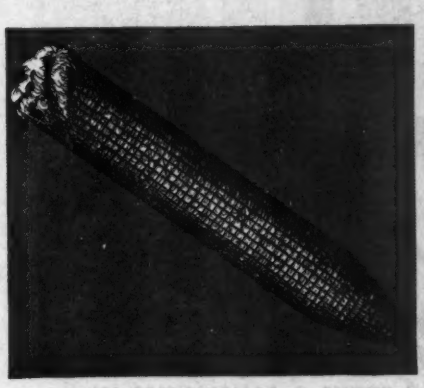
D. D. Feldman et al (formerly Oil Carriers,), 1 Max Pray-State, 3 miles west and north of the Benedum discovery, ran 7-in. casing to 11,945 ft. where it will perforate and test. The well is said to have shown some porosity, oil stains, and fluorescence from 11,860-11,945 ft., total depth. The last reported drill-stem test, from 11,790-11,844 ft., recovered 1,530 ft. of clear water blanket, 90 ft. of gas-cut water blanket, 270 ft. of oil and gas-cut water blanket, 90 ft. of drilling mud, and 900 ft. of oil and gas-cut salty mud. The oil showing was the first reported in the Ellenburger, topped at 11,535 ft., or minus 8,832 ft.

Sun Oil Co.'s Pennsylvanian prospect in Scurry County, the 1 Emil Schattell, Section 186, Block 97, H&TC Survey, 7 miles southwest of Snyder, set 7-in. casing to bottom at 6,859 ft., corrected, for perforating and testing after three drill-stem tests recovered oil. Some geologists have called the limestone as the Canyon, placing the top at 6,816 ft. The first drill-stem test of the limestone, from 6,816-37 ft., brought gas to the surface in 46 minutes and in 2 hours recovered 270 ft. of 39°-gravity oil, plus 250 ft. of oil and gas-cut mud. A second test from 6,816-42 ft., open 2 hours, brought gas in 88 minutes and recovered 200 ft. of clean oil and 350 ft. of oil and gas-cut mud. The third test was from 6,825-47 ft., in which gas came to the surface in 48 minutes, and recovery after 2 hours was 450 ft. of clean oil and 270 ft. of oil and gas-cut drilling mud, estimated to be 40 per cent oil. Open flowing bottom-hole pressure was 275 psi., increasing to 2,300 psi. when shut in 15 minutes. The 1 Schattell was originally scheduled to 8,500 ft. to explore the Ellenburger.

Four miles southwest of Snyder, Magnolia Petroleum Co. 1 Harris Winston, scheduled 8,000-ft. test, was drilling below 5,500 ft. It is 330 ft. out of the northeast corner of Subdivision 37, Lot 72, Kirkland & Fields Survey.

Gulf Oil Corp. made the first dual completion from the Connell (Simpson) and Ellenburger formations in the Jordan area of Ector County at its 22-B-E Connell, Section 26, Block B-16, PSL Survey. The new well extended Ellenburger production ⅝ mile to the northeast, and extended the Connell sand pay 1½ miles north. The Connell pay is immediately above the Ellenburger, and is identified by some geologists as Oil Creek sand. Early tests at the well gaged 180 bbl. of 46°-gravity oil in 8½ hours through ¼-in. choke from the Connell zone at 8,850-80 ft. An open-hole test of the Ellenburger from 8,938-62, total depth, gaged 102 bbl. of 43.4°-gravity oil in 8½ hours, and through ¼-in. choke. Gas-oil ratio on the two zones was 791 and 1,246 cu. ft.

Sun Oil Co. reported entering the Ellenburger at its 1 W. L. Ellwood Estate, Section 26, Block 16, SP Survey, 17½ miles south of Colorado City in Mitchell County. Top of the formation was 7,656 ft. Cores



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from 7,755-60 ft. recovered 3 ft. of brown, tight dolomite, with fair porosity and streaks of chert, and strong sulfur odor. A 1-hour drill-stem test from 7,693-7,718 ft. recovered 150 ft. of mud having a slight show of gas and strong sulfur odor.

Two miles west of the Shipley Silurian field in Ward County, Gulf Oil Corp. 1-E A. F. Bray, Section 14, Block 5, H&TC Survey, ran a drill-stem test of the Fusselman section of the Silurian but recovered no shows of oil or gas. The time the tool was open was not known, but the section from 8,170-8,230 ft. was tested, producing a good blow of air throughout and recovering 60 ft. of drilling mud. Top on the Fusselman was 8,170 ft., on an elevation of 2,465 ft. It was drilling ahead

First dual completion from the 5,600-ft. pay and Devonian, and a 1½-mile north extension on the 5,600-ft. zone, was made by Gulf Oil Corp. 446-56-D C. A. Goldsmith, Section 15, Block 44, T&P Survey, in the Goldsmith area of Ector County. The well made a 6-hour flow of 382 bbl. of 39°-gravity oil, with gas-oil ratio of 800 cu. ft., from the 5,600-ft. level, for a calculated potential of 1,528 bbl. daily. Flow was through ½-in. tubing choke. Completion in the Devonian was through 1¼-in. choke on tubing from open hole at 7,845-7,980 ft., and in 6 hours it gaged 317.4 bbl. of 40.3°-gravity oil, for a calculated daily potential of 1,270 bbl. Gas-oil ratio was 621 cu. ft.

Humble Oil & Refining Co. 4 Yarbrough & Allen, Section 31, Block B-14, 3½-mile southwest outpost to the Yarbrough & Allen field of Ector County, recovered 40 ft. of clean oil and 160 ft. of heavily oil and gas-cut drilling mud on a 2-hour drill-stem test of the Ellenburger from 10,700-35 ft. Operators were to deepen to 10,760 ft. and make another test.

New locations the past week in West Texas totaled 83 in proven fields and 5 wildcat failures. Wildcat locations were one each in Crane, Howard, Loving, Pecos and Sterling counties. Field tests, by counties, were: Hockley 21, Ector 13, Andrews 12, Gaines 6, Pecos 5, Dawson and Scurry 4 each, Mitchell and Winkler 3 each; Crane, Crockett, Hale, Howard and Sterling 2 each, and 1 each for Glasscock and Ward.

Completions for the same period were 54 oil wells and 10 dry holes. These included one successful wildcat in Schleicher County, and seven wildcat failures.

WEST TEXAS (DISTRICTS 8 & 7-C) SUCCESSFUL WILDCAT

Schleicher County: Phillips Petroleum Co. 1 Mrs. W. J. Weddell, Sec. 72, Blk. M, GH&SA Sur., 17 mi. NE Eldorado, 11 mi. SE Christoval, pumped 35 bbl. 36.5°-gravity oil a day, top Strawn 5,620 ft., top pay 5,630 ft., perforated 5,630-5,700 ft., TD 6,150 ft., PB 5,760 ft., elev. 2,392 ft.

WEST TEXAS (DISTRICTS 8 & 7-C) WILDCAT FAILURES

Crane County: Hunt Oil Co. 1 T&P Land Trust 34, Sec. 31, Blk. 42, T&P Sur., 18 mi. N Crane, dry, TD 7,810 ft., Grayburg 4,270 ft., Wolfcamp 7,660 ft., elev. 2,823 ft.

Culberson County: C & B Oil Co. 1 Grisham-Hunter, Sec. 42, Blk. 45, PSL Sur., east central part of county, dry, TD 2,810 ft. in sand, show sulfur gas 1,328-1,400 ft.

Mills-Lee 3 Fisher, Sec. 12, Blk. 110, PSL Sur., 35 mi. NW Toyah, dry, TD 554 ft.

Gaines County: Westbrook Oil Corp. 1 R. F. Owens, Sec. 9, Blk. C-33, PSL Sur., 5 mi. E Seagraves, dry, TD 5,635 ft., anhydrite 2,390 ft., Yates 3,330 ft., San Andres 4,850 ft., elev. 3,317 ft.

Martin County: Sun Oil Co. 1 J. E. Hale, Sec. 36, Blk. 35, T&P Sur., 19 mi. N Stanton, dry, TD 9,082 ft., Grayburg 3,270 ft., San Andres 3,540 ft., San Angelo 4,490 ft., Spraberry sand 5,820 ft., Leonard sand 7,040 ft., elev. 2,665 ft.

Reeves County: Hunt Oil Co. 1 J. M. Grider, Sec. 31, Blk. 58, PSL Sur., 10 mi. NW Toyah, dry, TD 4,052 ft., Delaware lime 3,250 ft., elev. 3,043 ft.

Tom Green County: Cities Service Oil Co. 1 Dr. Edward H. Jones, Maria Josepha Fernandez Sur. 100, 4 mi. NE Knickerbocker, dry, TD 6,935 ft., Ellenburger 6,584 ft., elev. 2,074 ft.

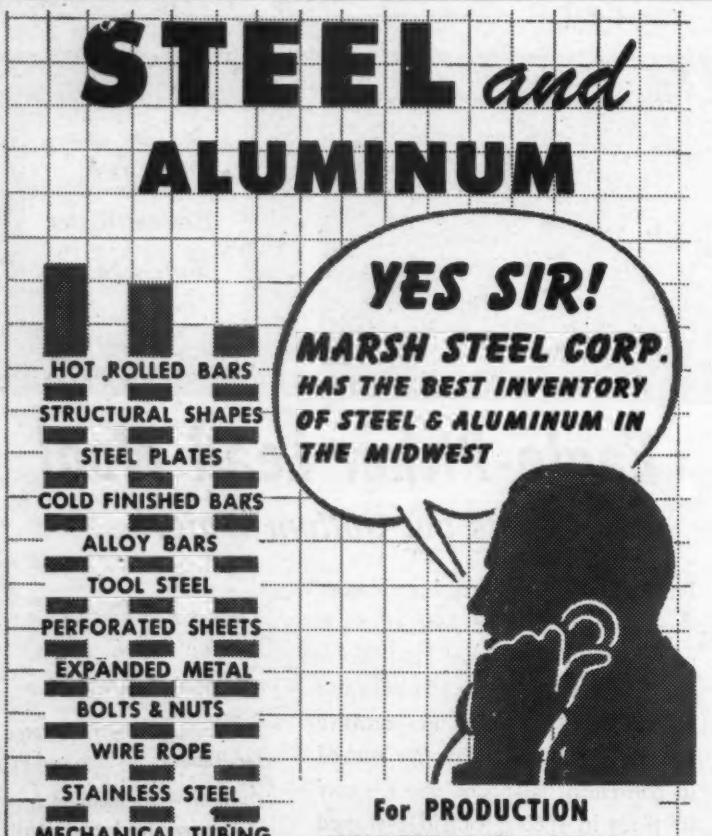
SOUTHEAST NEW MEXICO

HOBBS.—Thirteen miles east of Roswell, Richfield Oil Corp. 2 Comanche Unit, 24-11s-26e, 6,300-ft. Chaves County wildcat, was coring and testing below 6,426 ft. Extensive cores have shown some signs of oil. From 6,129-38 ft. the recovery was 8 ft. of dense dolomite, slightly fractured and bleeding oil in spots. A test from 6,109-38 ft., open 4 hours, recovered 210 ft. of slightly gas-cut drilling mud. More dolomite with bleeding oil in spots was cored from 6,138-58 ft. At 6,158-63 ft. there was fine crystalline dolomite with no shows. Cores from 6,163-83 ft. again showed hard dolomite bleeding oil in spots. A drill-stem test from 6,161-97 ft. recovered drilling mud with no shows.

Cores from 6,216-46 ft. recovered hard, fine crystalline dolomite showing water in the lower part and bleeding oil in spots. A 2-hour drill-stem test from 6,187-6,246 ft. produced a slight blow of air for 45 minutes and recovered 300 ft. of fluid, of which the top 100 ft. was slightly gas-cut, 100 ft. was muddy salt water, and 100 ft. was salt water.

In Curry County, 3 miles east of Melrose, C & B Oil Co. 1 Skarda, 3-2n-32e, was moving in cable tools to test a show of oil reported in lime from 3,009-3,110 ft. Total depth is 3,800 ft. Various reports have credited the well as being a prospective producer. It entered the San Andres lime at 2,500 ft.

In the Penrose Skelly field of Lea County, Rowan Drilling Co. 5 Will Cary, NE SE NW 22-22s-37e, was completed for a flowing potential of 213 bbl. of 39°-gravity oil a day, to open production from the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Montoya limestone. Total depth was 8,096 ft., in pre-Cambrian, plugged back to 7,190 ft., and top of pay was 7,140 ft.

In the Cross Roads area, Magnolia Petroleum Co. abandoned location for its 1 Santa Fe-Pacific "B," SW NW 26-9s-36e.

NEW MEXICO WILDCAT FAILURE

Chaves County: DeKalb Agricultural Ass'n. 4 J. P. White Co., NW NE 18-10s-29e, dry, TD 2,850 ft., salt 640 ft., San Andres 2,135 ft., elev. 3,872 ft.

KANSAS

New Shallow Pay for Russell County Pool

STEARNS DRILLING CO. has good oil flow from pay at base of Permian system at 5 Opdycke, CNL S½ SW 20-14s-13w, Hall-Gurney field, Russell County. The formation was topped at 2,015 ft. and hole was drilled to 2,025 ft. when flow started. The pay zone is sandstone and has been tentatively identified as Indian Cave near the base of the Permian. Other wells near 5 Opdycke produce from the Topeka Gorham, and Lansing-Kansas City formations.

In Stafford County, J. M. Huber 1 Symns, NE NE SE 28-22s-14w, has been completed with a potential of 480 bbl. per day from Lansing-Kansas City through perforations at 3,696-3,704 ft. after treatment with 3,000 gal. of acid. Hole was carried to 3,945 ft. but made water from the Arbuckle at that depth.

Westgate-Greenland Oil Co. 1 McClelland, NW NW NE 4-9s-19w, Rooks County, has been completed with a potential of 314 bbl. per day from the Arbuckle to open West Barry pool. Total depth is 3,449 ft. with top of the Arbuckle called at 3,442 ft.

In the northwestern part of Rice County, Palmer Oil Co. has completed 1 Bredfelt, SW NE SW 7-18s-9w, with a potential of 448 bbl. per day from the Arbuckle to reopen the abandoned Bredfelt pool. Top of the Arbuckle was logged at 3,226 ft. and hole carried to a total depth of 3,235 ft.

For the week, a total of 56 new locations were reported. Rice County led with seven, followed by Russell County with six, and Barton County with five.

KANSAS SUCCESSFUL WILDCATS

Rooks County: Harry Gore 1 Ruder, SW SW NE 14-9s-19w, produced 3,000 bbl. of oil per day from Arbuckle at 3,455-62 ft., TD.

Seward County: Stanolind Oil & Gas Co. 1 Wheatley, NE NE SW 23-33s-31w, produced 132 bbl. of oil per day from Lansing at 5,095-5,100 ft.; Morrow 5,552 ft., Mississippian 5,602 ft., Misener 6,842 ft., Viola 6,852 ft., Simpson 7,060 ft., Arbuckle 7,119 ft., TD 7,340 ft.

KANSAS WILDCAT FAILURES

Butler County: Thrifty Drilling Co. 1 Hopkins, NE NW NE 17-26s-4e, dry, TD 2,700 ft., Kansas City 2,118 ft., Mississippian 2,593 ft.

Ellis County: Lario Oil Co. 1 Clements, NE NE NE 34-11s-18w, dry, TD 3,726 ft., anhydrite 1,376 ft., Heebner 3,354 ft., Lansing 3,390 ft., Arbuckle 3,711 ft.

Ellsworth County: D. R. Lauck 1 Siemsen, NW SW NW 10-17s-10w, dry, TD 3,382 ft., Heebner 2,841 ft., brown lime 2,946 ft., Lansing 2,968 ft., Arbuckle 3,331 ft.

Graham County: Wilcox, Bennett & Roberts 1 Sperling, SW SE NE 33-7s-23w, dry, TD 4,072 ft., Topeka 3,409 ft., Heebner 3,611 ft., Lansing 3,641 ft., Arbuckle 4,044 ft.

Wilcox, Bennett & Roberts 1 Ninemire, SW SW SW 7-9s-22w, dry, TD 4,120 ft., Kansas City 3,682 ft., Arbuckle 4,087 ft.

Pawnee County: Mid-Continent Pet. 1 Alice Gore, SW SW SE 1-21s-18w, dry, TD 4,040 ft., anhydrite 1,145 ft., Lansing 3,567 ft., Heebner 3,505 ft., Toronto 3,552

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ft., Pennsylvanian sand 3,948 ft., Arbuckle 3,956 ft.

Pratt County: Murfin & Phillips Pet. 1 Barnes, NW NW NW 13-27s-12w, dry, TD 4,566 ft., Ft. Riley 1,680 ft., Heebner 3,470 ft., brown lime 3,686 ft., Lansing 3,699 ft., Mississippian 4,151 ft., Viola 4,350 ft., Simpson sand 4,440 ft., Arbuckle 4,537 ft.

Rooks County: National Associated 1 Coler, NE NE SW 14-9s-19w, dry, TD 3,653 ft., anhydrite 1,830 ft., Topeka 3,036 ft., Heebner 3,251 ft., Toronto 3,274 ft., Lansing 3,294 ft., Marmaton 3,532 ft., shaly conglomerate 3,557 ft., cherty conglomerate 3,564 ft., Arbuckle 3,636 ft.

Westgate-Greenland Oil Co. 1 Henderson, SW SW NE 17-10s-19w, dry, TD 3,830 ft., Dakota 1,000 ft., anhydrite 1,620 ft., Lansing 3,438 ft., conglomerate 3,718 ft., Simpson 3,774 ft., Arbuckle 3,792 ft.

Sedgwick County: Dave Alter 1 McAdams, SE SW SE 28-29s-2w, dry, TD 3,620 ft., Topeka 2,025 ft., Kansas City 2,957 ft., Mississippian 3,595 ft.

Stafford County: Hinkle Oil Co. 1 Shepherd, SW SW SW 34-21s-11w, dry, TD 3,473 ft., brown lime 3,104 ft., Lansing 3,127 ft., Viola 3,395 ft., Simpson 3,413 ft., Simpson shale 3,421 ft., Arbuckle 3,463 ft.

LEGAL

Department of the Interior, Wind River Indian Agency, Fort Washakie, Wyoming. Notice is hereby given that SEALED BIDS will be received until 2:10 P. M., July 26, 1948, at the Wind River Agency, Fort Washakie, Wyoming, for the leasing of allotted trust land, for oil and gas mining purposes, located in Fremont County, Wyoming, described as follows: All interest in Lots 4, 5, and 6 of Section 25, Township 2 South, Range 1 East, W.R.M. The above described unit, involving 86.26 acres of individually owned trust land, will be sold as one lease to be drawn on the applicable Government form. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. The successful bidder will be required to pay the cost of advertising. The lease will be sold to the highest responsible bidder for a bonus consideration upon an acreage basis in addition to the royalty of 12½%. Each bid must be accompanied by a certified check or bank draft drawn upon a solvent bank in an amount equivalent to at least 20% of the bonus bid plus 20% of the first year's rental at the rate of $1.25 per acre per annum, as a guaranty of good faith. The check is to be made payable to the TREASURER OF THE UNITED STATES. The lease must be completed and filed with this Office within 20 days from the date it is received by the successful bidder for execution and accompanied by payment of the remainder of the bonus bid, the balance of the first year's rental, the filing fee of $10.00, and cost of lease forms. Failure in any of these conditions may subject the bid to cancellation without further notice and forfeiture of payments already made. The lease to be issued for the described unit will be made for a term of 10 years and as much longer thereafter as oil and/or gas is produced in paying quantities, in accordance with the provisions of the Act of March 3, 1909, (35 Stat. 783) and the regulations approved October 8, 1937, Title 25, Code of Federal Regulations, Part 189, as amended. A recent amendment to these regulations raised the lease acreage limitation to 25,000 acres for any one lessee. The rate of royalty will be 12½% of the value of all oil, gas and/or natural gasoline unless the lessor, with the approval of the Secretary of the Interior, elects to take royalty in kind. The adequacy of the bonus offers will be determined by the Geological Survey. A suitable bond will be required and such bond must be approved by the Department. The responsibility of complying with any requirements of the Federal Documentary Stamp Statutes will be left with the successful lessee. Except as otherwise provided for in the approved lease form, no special provision is made requiring the successful lessee to drill a deep test well on any area leased under this notice of sale. A copy of the Allotted oil and gas lease form may be had upon request. All bids should be addressed to the Superintendent, Wind River Agency, Fort Washakie, Wyoming, in a plain envelope marked: BID FOR OIL AND GAS MINING LEASE, LANDER FIELD, TO BE OPENED 2:10 P.M., JULY 26, 1948. For further information call or write Mr. Waller, Land Division, of the Wind River Agency. J. M. COOPER, Superintendent.

OHIO, KENTUCKY

Perry County Prospect May Open Gas Pool

COLUMBUS.—Roy Weed et al completed a semiwildcat on the George M. Jones Co. in Section 33, Harrison Township, Perry County, that will encourage more drilling and may open up a fair sized gas pool. The Clinton was reached at 3,570 ft. and drilling stopped at 3,586 ft. while still in pay sand, with an open flow of 2,000,000 cu. ft. of gas natural and a rock pressure of 1,125 psi.

The Wittmer Co.'s wildcat on W. O. Wortman, Section 24, Bristol Township, Morgan County, reached the Clinton at 4,810 ft. and at 1 ft. in had 520,000 cu. ft. of gas. Drilling was stopped to run casing before going on through the sand. The gas blew down to 325,000 cu. ft. in 14 hours.

Burtner, Morgan, and Stephen 1 Ralph Pingstock, Section 24, Lawrence Township, Tuscarawas County, a north offset to the 1 G. J. Lab, logged the red Clinton at 4,752-87 ft. with 42,000 cu. ft. of gas, and the bottom white at 4,806-27 ft. with an additional 1,410,000 cu. ft. When shut in after shot, the gage was 1,750,000 cu. ft. Two miles to the north in the same township, the Natural Gas Co. of West Virginia drilled in the 1 Raymond Lab in Section 13, with an open flow of 328,000 cu. ft. of gas natural. The well was shut in on the casing 45 minutes after shot at 3,465,000 cu. ft.

Mid-East Oil Co. 2 J. R. Underwood, Section 24, Hopewell Township, Perry County, showed only a small amount of oil and 300,000 cu. ft. of gas natural. The sand at 3,013-49 ft. was shot with 80 qt. and the well gaged 2,600,000 cu. ft. when shut in on the casing ½ hour after shot. Rock pressure was 1,000 psi. The Mid-East 1 Charles Hammer, Section 28, Madison Township, was shot with 90 qt. and flowed 50 bbl. with 300,000 cu. ft. of gas in 24 hours.

Twenty-four locations from 15 counties were reported for the week. Perry County again led with six and was followed by Ashland and Muskingum counties with two each. Ashland field led in completions with 8 out of 29.

WILDCAT FAILURE COMPLETED IN OHIO

Meigs County, Letart Township: Quaker State Oil Co. 1 J. H. Hayman, Sec. 5, shale 3,380-3,565 ft., TD 3,614 ft.

EASTERN KENTUCKY

ASHLAND.—Kentucky - West Virginia Power Co. deepened Well No. 5,321, W. B. Preece property in Martin County, and recompleted it for 1,565,000 cu. ft. of gas from the Big lime, with total depth at 1,680 ft.

WESTERN KENTUCKY

OWENSBORO.—Cumberland Petroleum Co. 1 Ray Linzy, 25-I-17, Crittenden County, wildcat about 1 mile east of Dycusburg, is drilling below 1,260 ft. after a show of oil at 1,225-30 ft.

In McLean County, Benedum-Trees Oil Co. and T. Galey 1 George McManama, NW NW SW 22-L-28, continues on test of Bethel sand at 1,872-80 ft. and is showing for a producer of about 25 bbl. per day.

At the north end of Uniontown pool in Union County, Hiawatha Oil & Gas Co. has completed 7 Sally Stannus, 15-P-20, for an initial production of 40 bbl. per day from Waltersburg at 1,730-60 ft.

INDIANA

EVANSVILLE.—Gibson County has another pool opener at Gilliam Drilling Co. and Carter Oil Co. 1 H. M. Montgomery, SE NE SE 18-3s-11w in the area about 1¼ miles southeast of Owensville. Operator has set casing for a test of the Rosiclare at 2,471-75 ft. after a 1-hour drill-stem test had gas in 8 minutes and recovered 1,000 ft. of clean oil and 150 ft. of oil and gas-cut mud with no water.

About 2 miles west and slightly north of the Montgomery well, C. E. Skiles and W. E. Brubeck 1 Columbus Smith, SW NW NW 13-3s-12w, Gibson County, has been completed for 104 bbl. per day from the Waltersburg through casing perforations at 1,801-18 ft. Total depth was 2,636 ft. plugged back to 1,836 ft.

In Posey County, George & Wrather, Brubeck, and Pappas 1 George Westheiderman, NW NW SE 2-4s-14w, is cleaning out and testing Aux Vases at 2,864-87 ft. Well is reported to have swabbed 10 bbl. of oil per

LEGAL

Department of the Interior, Wind River Indian Agency, Fort Washakie, Wyoming. Notice is hereby given that SEALED BIDS will be received until 2:00 P.M., Monday, July 26, 1948, at the Wind River Agency, Fort Washakie, Wyoming, for the leasing of the following parcel of Tribal land, located in Hot Springs County, Wyoming, for oil and gas mining purposes: S/2 S/2 of Sec. 25; E/2 and NW/4 Sec. 36, TWP. 9 North, RANGE 2 East; NW/4 and S/2 of Sec. 31, TWP. 9 North, RANGE 3 East; SW/4 and the W/2 NW/4 of Sec. 5; E/2 and NW/4 of Sec. 6; E/2 NE/4 Sec. 7; NW/4 Sec. 8, TWP. 8 North, RANGE 3 East, W.R.M. The above described unit, involving 2113.82 acres of land, will be sold as one lease to be drawn on the applicable Government form. The right is reserved to reject any and all bids. The successful bidder will be required to pay the cost of advertising. The lease will be sold to the highest responsible bidder for a cash bonus upon an acreage basis in addition to the royalty of 12½%. Each bidder must enclose a certified check or bank draft drawn upon a solvent bank in an amount equivalent to at least 20% of the bonus bid, plus 20% of the first year's rental at the rate of $1.25 per acre per annum, as a guaranty of good faith. All checks are to be made payable to the TREASURER OF THE UNITED STATES. The lease must be completed and filed with this Office within 20 days from the date it is received by the successful bidder for execution and accompanied by payment of the remainder of the bonus bid, the balance of the first year's rental, a filing fee of $10.00, and cost of the printed lease forms. Failure in any of these conditions may subject the bid to cancellation without further notice and forfeiture of payments already made. The adequacy of the bonus offers will be determined by the U. S. Geological Survey. The lessee will be required to use diligence in drilling and producing operations and shall commence the drilling of a test well within one year from the date of approval of the lease and diligently continue drilling to test to the satisfaction of the Geological Survey the oil producing possibilities of the Madison formation, unless oil or gas in commercial quantities is found at a lesser depth or the Geological Survey shall determine that further drilling in the well would not be warranted. The lease to be issued for the described unit of Tribal land will be made for a term of 10 years from date of approval by the Commissioner of Indian Affairs and as long thereafter as oil and/or gas is produced in paying quantities, in accordance with the provisions of the Act of May 11, 1938, (52 Stat. 347), and the regulations approved May 31, 1938, Title 25, Code of Federal Regulations, Part 186, as amended. A recent amendment to these regulations raised the lease acreage limitation to 25,000 acres for any one lessee. The rate of royalty will be 12½% of the value of all oil, gas, and/or natural gasoline unless the lessor, with the approval of the Commissioner of Indian Affairs, elects to take royalty in kind. A suitable bond will be required, and such bond must be approved by the Department. The responsibility of complying with any requirements of the Federal Documentary Stamp Statutes will be left with the successful lessee. The bids should be addressed to the Superintendent, Wind River Agency, Fort Washakie, Wyoming, in an envelope plainly marked: BID FOR OIL AND GAS MINING LEASE, OWL CREEK DOME, TO BE OPENED 2:00 P.M., JULY 26, 1948. For further information, call or write Mr. Waller, Land Division of the Wind River Agency. J. M. COOPER, Superintendent.

hour while cleaning out. This is an extension of ½ mile to South Griffin pool.

INDIANA SUCCESSFUL WILDCAT

Posey County: B. M. Heath 1 "A" J. Y. Welborn, SW NW NE 13-7s-12w, IP 30 bbl., Waltersburg, 1,804-11 ft., TD 1,816 ft. plugged back to 1,811 ft. Discovery well for West Franklin pool.

MISSISSIPPI

La Grange Field Leads Activities

JACKSON.—Burden-Kemp-Gilster 5 Elizabeth Stanton, 84-7n-2w, in La Grange field of Adams County, has been completed for an initial production of 180 bbl. of 41.6°-gravity oil flowing through an 11/64-in. choke, with tubing pressure of 500 psi., casing pressure 400 psi. Total depth is 6,250 ft., with perforations in Baker sand for completion at 6,150 ft. to 6,178 ft.

Also in La Grange field, Magnolia Petroleum Co. 2 Stanton, 84, 7n-2w, was completed through perforations at 6,133-36 ft., flowing 108 bbl. of oil per day through a 10/64-in. choke, tubing pressure 240 psi., gas-oil ratio 175, gravity 40°, total depth 6,183 ft.

Milhoan Production Co. 1 E. Stanton, 84-7n-2w, in La Grange field, flowed initial production of 204 bbl. of oil per day through 11/64-in. choke. Total depth 6,204 ft., with perforations in Baker sand for completion, top Baker sand 6,141-53 ft.

In Mallalieu field, Lincoln County, The California Co. 1 Houston-Smith Unit 1, 13-6n-7e, has been completed for initial production of 492 bbl. of 38°-gravity oil flowing through 11/32-in. choke. Total depth is 10,484 ft., with perforations at 10,468-78 ft.

In Yellow Creek field, Wayne County, Humble Oil & Refining Co. 1 Mrs. John Street, et al, 13-9n-8w, has been completed on the pump with initial production of 225 bbl. of oil per day, 20.1° gravity. Total depth 5,180 ft., completed in the Stanley sand 5,144-80 ft.

One wildcat start was reported this week in Adams County while eight development locations were reported, two each in La Grange field, Adams County, and Yellow Creek field, Wayne County, and one each in Heidelberg field-East, Jasper County; Mallalieu field, Lincoln County; Pickens field, Madison County, and Pine Ridge field, Adams County. There were 11 completions this week, all in proven areas.

LEGAL

U. S. DEPARTMENT OF THE INTERIOR, Bureau of Land Management, Washington 25, D. C. Notice is hereby given that the lands listed herein are offered through sealed bids on the terms hereinafter specfied, to qualified bidders of the highest cash amounts per acre as a bonus for the privilege of leasing the lands under sec. 17 of the Leasing Act of February 25, 1920 (41 Stat. 437; 30 U.S.C. sec. 181), as amended. All bids must be submitted to the Director, Bureau of Land Management, Washington 25, D. C., on or before 1 p.m. of the date set out herein. Each bidder must submit with the bid one-fifth of the amount bid in cash or by certified check on a solvent bank or by money order made payable to the order of the Treasurer of the United States, and file the showing of qualifications to receive a lease required under 43 CFR 192.42 (b) and (c). The envelopes should be plainly marked that they are not to be opened before the date and hour set out herein, and should show the number of the parcel and the name of the field. No bids received after the hour fixed herein for receiving bids will be considered. The remainder of the bonus and the annual rental must be paid and an acceptable surety bond in the sum of at least double the amount of rental, but in no case less than $1,000 nor more than $5,000, must be furnished by a successful bidder prior to the issuance of a lease. An acceptable $5,000 surety bond will be required prior to commencing drilling operations on the land. The deposits of the other bidders will be returned upon acceptance of the successful bids. Bidders are warned against violation of section 59, U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids. Royalties payable to the United States will be at the rate of 12½ per cent to 25 per cent for oil, and 12½ per cent to 16⅔ per cent for gas, in accordance with Schedule B in the lease form. Annual rental will be at the rate of $1.00 per acre. The land is offered in one parcel described as Tract 49E (NW¼SE¼) sec. 21 T. 43 N., R. 92 W., 6th P.M., Wyoming, 40.23 acres, and is within the known geologic structure of the Kirby Creek field undefined. Bids must be submitted on or before 1 p.m., Eastern Daylight Saving Time, July 21, 1948. Marion Clawson, Director.

ILLINOIS

Mattoon Pool Well Tests New Deep Pay in Devonian

MATTOON.—Walter Duncan is testing Devonian limestone at 7 Taylor, NW NE NW 11-12n-7e, near the edge of Mattoon pool in Coles County. A 3-hour drill-stem test at 3,154-71 ft. had gas in 11 minutes and recovered 2,350 ft. of oil with no water. Well had slight oil shows on tests in the Carper section of the Lower Mississippian and a gas show near the top of the Devonian which was called at 3,118 ft. Casing has been set at 3,160 ft. for further tests of the Devonian oil pay. Other producing zones in the pool are: Cypress, Rosiclare, and McClosky.

Clay County has a prospective new oil area near the Bible Grove Consolidated pool where Baldwin & Pruett have set pipe to test Aux Vases sand at 1 D. L. Marshall, NE NE SW 27-5n-7e. A 1-hour drill-stem test at 2,800-07 ft. recovered 90 ft. of oil-cut mud with no water. Casing was set to 2,800 ft. and total depth is 2,807 ft.

In Washington County, W. C. McBride 1 Aloys Hunleth, SE NE NW 29-3s-4w, McKinley pool, is reported to be swabbing 10 bbl. per hour from Silurian pay at 2,220-75 ft. through casing perforations. McBride is running casing for a Silurian test at 1 Verne Frieman, NW SW NE of the same section. The Silurian is a new deeper pay zone for McKinley pool.

In Hamilton County, Indiana, Farm Bureau 1 C. H. Allardin Heirs, NW NW SE 9-6s-6e, is cleaning out for tests of the McClosky at 3,154-68 ft., 3,226-34 ft., and 3,238-58 ft. a 1-hour drill-stem test at 3,209-34 ft. recovered 320 ft. of oil-cut mud.

ILLINOIS WILDCAT FAILURES

Jasper County: Bruce Hemman 1 Maggie Nix, SE NE SW 14-5n-8e, dry, TD 3,114 ft.

Clark County: G. W. Dittman et al 1 Guy Ping, W½ SW NE 31-9n-14w, dry, TD 1,355 ft.

Bond County: Joe Kesl, Jr. 1 Martin, SW NE NE 27-6n-4w, dry, TD 1,997 ft.

Richland County: R. B. Martin 1 B. Groff et al, SW NW SW 21-3n-14w, dry, TD 3,274 ft.

Wabash County: Arvin Drilling Co. 1 Bradshaw, SE SW NE 22-1n-13w, dry, TD 2,796 ft.

Jefferson County: W. A. Schuller 1 Palmer, NW SW SW 34-2s-3e, dry, TD 2,912 ft.

Gallatin County: National Associated Oil Co. 1 L. Edwards, NE NE SW 25-7s-9e, dry, TD 2,926 ft.

Saline County: P. N. Jans and C. H. Olson, 2 Victor Suttern, NE SE NW 7-8s-7e, dry, TD 3,026 ft.

Washington County: J. F. Hinkle 1 Peter Johonnes, SE SE NW 14-3s-2w, dry, TD 1,355 ft.

Texas Union Shop Law Heads for Court Test

WASHINGTON.—A recent ruling by the National Labor Relations Board that it is precluded by the Taft-Hartley Act from holding union shop elections in 13 states which have laws prohibiting union-shop agreements was heading for the courts this week as major unions laid plans for a legal test case.

By a three-to-two split, the board held last month that the Taft-Hartley Act could not take precedence over state laws and in effect, the majority said, it "removes all federal restrictions upon existing and future state legislation prohibiting compulsory unionism insofar as the National Labor Relations Act is concerned, even where such legislation may affect employes engaged in interstate commerce.

The decision is considered by labor as one of the most important ever rendered by the board. It definitely outlaws union-shop elections in the oil state of Texas, as well as in Arizona, Arkansas, Florida, Georgia, Iowa, Maine, Nebraska, North Carolina, North and South Dakota and Tennessee.

The NLRB held that the legislative history of the Taft-Hartley Act establishes the intent of Congress "to leave to the exclusive jurisdiction of the states the prohibition of union-shop agreements to the extent that prohibition in this respect now exists or may hereafter exist in such states." Labor leaders declared the ruling is an invitation to other states to enact laws banning the union shop.

Board-conducted elections in the antiunion-shop states, even though agreed to by employers, the decision said, "would lead only to the circumvention and frustration of state law, a result that Congress clearly did not intend." Further, the board said, should it hold elections in states where union-shop contracts are illegal, it might find itself "in the dilemma of having to accept a violation of state law as a defense against an alleged violation of the federal statute."

Canadian Tariff Item Is Made Permanent

OTTAWA.—Announcement has been made by W. J. Callaghan, commissioner of tariff, that the tariff item providing that machinery and apparatus be used exclusively in exploratory or discovery drilling shall be free of duty and sales tax, has been made permanent. Geophysical instruments and equipment for use in prospecting, exploration and development of oil and natural gas are being placed on a similar basis.

STATISTICS and T

WEEKLY WELL COMPLETIONS . . . WEEK ENDED JULY 3, 1948

	Total of all wells					Cum.		Wildcat completions and discoveries					Cumulative total, 1948				
	Comp.	Oil	Gas	Dry	Footage	1948	1947	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	25	12	0	*13	32,047	792	729	0	0	0	0	0	0	0	0	0	0
Pennsylvania	48	22	2	†24	78,951	1,357	1,401	0	0	0	0	0	0	0	9	13	22
West Virginia	18	3	12	3	50,848	383	402	0	0	1	1	2	3	0	28	32	63
Ohio	29	6	6	‡17	63,002	671	641	0	0	0	1	1	2	0	8	17	27
Indiana	24	11	0	§13	52,301	472	300	1	0	0	0	1	12	0	1	18	31
Kentucky	10	6	0	4	12,521	327	304	0	0	0	0	0	4	0	0	8	12
Illinois	55	33	0	22	148,602	1,081	957	0	0	0	9	9	22	0	1	154	177
Michigan	24	7	7	10	49,958	378	379	0	0	2	5	7	9	0	8	130	147
Kansas	65	32	11	§22	216,758	1,489	1,246	2	0	0	11	13	26	0	4	203	233
Neb., Mo., Iowa	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1
Oklahoma	88	40	2	§46	318,574	2,011	2,042	1	0	0	21	22	65	7	15	325	412
Texas	253	153	13	87	1,067,993	5,664	4,345	8	1	2	44	55	155	16	52	991	1,214
North Central (Dist. 7-B & 9)	83	39	2	42	235,882	1,743	1,363	3	0	0	21	24	59	0	9	345	413
West (Dist. 7-C & 8)	64	54	0	10	264,587	1,526	1,053	1	0	0	7	8	27	0	2	105	134
Panhandle (Dist. 10)	12	9	0	3	34,783	304	215	0	0	0	0	0	0	0	1	6	7
Eastern (Dist. 5 & 6)	14	8	3	3	85,761	266	246	0	0	0	1	1	5	2	0	61	68
Gulf Coast (Dist. 2 & 3)	47	27	4	16	305,741	912	774	4	1	1	10	16	41	12	11	224	288
Southwest (Dist. 1 & 4)	33	16	4	13	141,239	913	694	0	0	1	5	6	23	2	29	250	304
Louisiana	46	36	0	10	227,531	1,074	629	2	0	0	3	5	20	12	2	104	138
Northern	33	27	0	6	104,218	715	333	0	0	0	1	1	1	1	0	50	52
Southern	13	9	0	4	123,313	359	296	2	0	0	2	4	19	11	2	54	86
Arkansas	3	2	0	1	6,704	146	131	0	0	0	1	1	3	0	0	44	47
Mississippi	11	8	2	1	76,264	198	229	0	0	0	0	0	2	0	3	40	45
Southeastern States	0	0	0	0	0	22	22	0	0	0	0	0	0	0	0	20	20
Montana	4	3	0	1	10,611	128	113	0	0	0	0	0	2	0	0	8	10
Wyoming	11	9	0	2	51,163	221	106	1	0	0	1	2	14	0	1	23	38
Colorado-Utah	5	1	0	4	8,549	122	93	0	0	0	4	4	0	0	1	23	24
New Mexico	16	10	1	5	68,529	313	258	0	0	0	1	1	4	1	1	23	29
California	56	45	0	11	196,496	1,451	1,012	1	0	0	8	9	44	0	1	149	194
Total United States	791	439	56	296	2,737,402	18,302	15,341	16	1	5	110	132	387	36	135	2,326	2,884
Total previous week	753	429	51	273	2,506,461	17,511	14,683	13	1	3	96	113	371	35	130	2,216	2,752
Total July 5, 1947	658	355	72	231	2,355,444			12	1	5	75	92	326	41	93	1,903	2,363

Service wells included: *13, †24, ‡4, §1.

CRUDE PRICES AND REFINERY ACTIVITY

GRAVITY SCHEDULES

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity—	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Tex.*	West Tex.†
18-18.9	$2.17	....	....	....
19-19.9	2.19	....	....	....
20-20.9	2.21	$2.25	....	$2.12
21-21.9	2.23	2.27	....	2.14
22-22.9	2.27	2.29	....	2.16
23-23.9	2.30	2.31	....	2.18
24-24.9	2.34	2.33	$2.56	2.20
25-25.9	2.38	2.35	2.58	2.22
26-26.9	2.41	2.37	2.60	2.24
27-27.9	2.45	2.39	2.62	2.26
28-28.9	2.49	2.41	2.64	2.28
29-29.9	2.52	2.43	2.66	2.30
30-30.9	2.56	2.45	2.68	2.32
31-31.9	2.59	2.47	2.70	2.34
32-32.9	2.62	2.49	2.72	2.36
33-33.9	....	2.51	2.74	2.38
34-34.9	....	2.53	2.76	2.40
35-35.9	....	2.55	2.78	2.42
36-36.9	....	2.57	2.80	2.44
37-37.9	....	2.59	2.82	2.46
38-38.9	....	2.61	2.84	2.48
39-39.9	....	2.63	2.86	2.50
40 and above	....	2.65	2.88	2.52

*For crude from Daboval, El Campo, and Sand Point. †Includes Lea County, New Mexico.

A.P.I. REFINERY REPORT, WEEK ENDED JUNE 26

District—	Crude runs, daily avg.	(Thousands of barrels) Production: Gasoline†	Kerosine	Gas & dist. oil	Residual	Stocks at refineries, bulk terminals, in transit and in pipe lines: Gasoline*	Kerosine	Gas & dist. oil	Residual
East Coast	919	2,073	383	1,343	1,453	25,284	7,627	13,490	9,029
Appalachian:									
District 1	113	345	53	84	85	2,054	361	451	346
District 2	58	206	16	36	102	936	113	119	122
Ind., Ill., Ky.	952	3,582	398	920	1,160	21,193	3,422	5,924	4,702
Okla., Kans., Mo.	422	1,652	139	556	535	8,984	1,111	3,382	1,908
Inland Texas	254	1,149	95	186	399	3,360	742	515	824
Texas Gulf Coast	1,386	4,388	735	2,230	1,821	15,823	1,825	5,735	5,654
La. Gulf Coast	422	1,219	344	567	542	5,093	1,545	2,878	1,324
N. La. and Ark.	87	222	54	102	140	2,106	499	358	280
Rocky Mountain:									
New Mexico	10	32	7	9	23	88	25	29	27
Other Rocky Mtn.	154	473	26	173	209	2,881	182	930	983
California	877	2,597	100	994	2,389	16,376	984	11,365	33,613
June 26, 1948	5,674	17,938	2,350	7,200	8,858	104,178	18,436	45,166	58,812
June 19, 1948	5,566	17,648	2,149	6,758	8,963	104,603	17,575	43,783	58,726
June 28, 1947	5,101	16,161	1,928	5,532	8,262	90,806	14,481	39,196	48,718

*Finished and unfinished. †At refineries including natural blended.

Bureau of Mines crude-oil stocks 222,081,000 bbl. as of June 26—down 240,000 bbl. One year ago 236,221,000 bbl.

FLAT CRUDE PRICES

Representative posted schedules per bbl.

East Texas	$2.65
Kettleman Hills, California*	2.14
Beauregard Parish	2.60
Illinois Basin	2.77
Pecos County, Texas (Yates)	2.35
Bradford, Pennsylvania	5.00
Eastern Ill. and Western Ind.†	2.77
Tomball, Texas Gulf Coast	2.63

*37°-37.9°. †35° and above.

TRENDS

DAILY AVERAGE PRODUCTION FOR WEEK

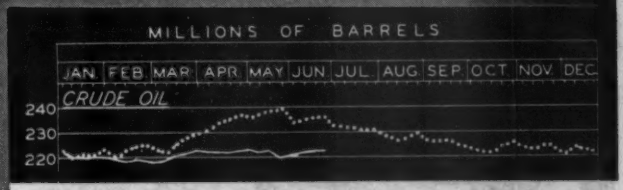
	July 3 crude oil	B. of M. June demand	June 26 crude oil
Alabama	1,345	1,500	1,400
Arkansas	81,260	87,000	83,000
California	948,800	946,000	949,700
Colorado	45,570	49,000	45,710
Eastern	62,950	64,900	67,350
Florida	950	1,000	825
Illinois	170,900	178,000	171,700
Indiana	21,000	16,000	19,800
Kansas	300,400	300,000	302,600
Kentucky	23,000	26,000	23,000
Louisiana	471,510	488,000	469,300
North Louisiana	112,500	.....	113,300
South Louisiana	359,010	.....	356,000
Michigan	42,300	46,000	45,750
Mississippi	125,210	124,000	125,950
Montana	26,400	26,000	26,430
Nebraska	400	600	400
New Mexico	128,675	136,000	128,510
Oklahoma	417,950	425,000	430,850
Texas	2,459,330	2,490,000	2,457,375
Dist. 1 (Southwest)	28,675	.....	28,700
Dist. 2 (Southwest)	174,325	.....	173,675
Dist. 4 (Southwest)	254,955	.....	256,725
Dist. 3 (Gulf Coast)	495,950	.....	498,100
Dist. 5 (Eastern)	47,350	.....	46,925
Dist. 6 (Eastern)	125,875	.....	123,100
East Texas Field	308,150	.....	312,000
Dist. 7-C (West)	44,775	.....	46,300
Dist. 8 (West)	701,575	.....	697,550
Dist. 7-B (W. Central)	48,875	.....	48,425
Dist. 9 (N. Central)	140,875	.....	139,775
Dist. 10 (Panhandle)	87,950	.....	86,100
Wyoming	143,780	155,000	144,800
Total United States	*5,471,730	5,560,000	5,494,450
Change from prev. wk., dn. 22,720			

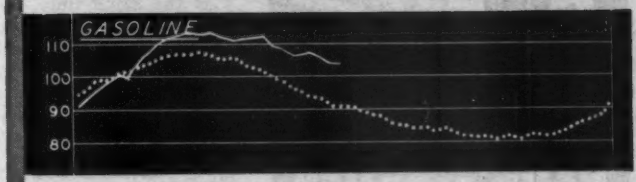
Total production January 1-July 3..... †1,010,073,762 bbl.
Same period last year (crude plus cond.).. 905,269,810 bbl.

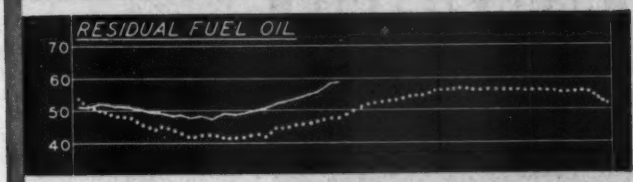
*Not incl. 76,511 bbl. condensate. †Incl. 13,788,897 bbl. condensate.

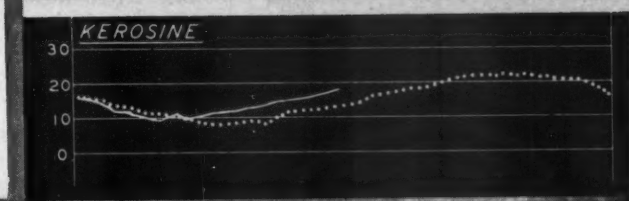
STOCKS IN UNITED STATES

---- 1947 ——— 1948



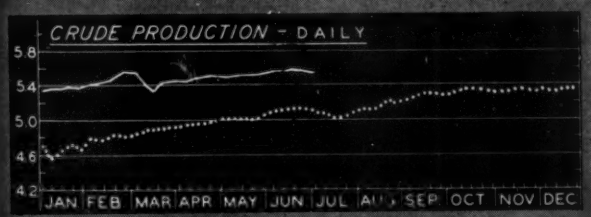






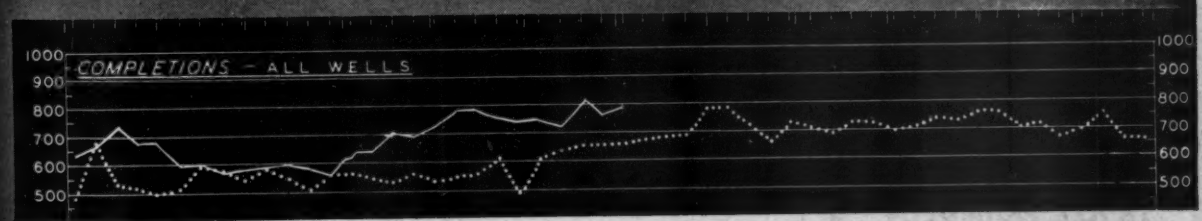
DAILY OPERATIONS

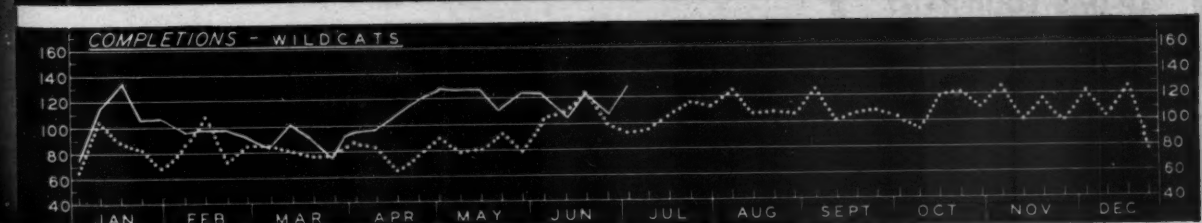
---- 1947 ——— 1948



WEEKLY COMPLETIONS

---- 1947 ——— 1948





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HAND CLEANER
Easy on greasy hands
All you do is rub a dab of Oil Base Hand Cleaner on your hands, like ordinary soap, until grime dissolves—then wipe off on rag or paper towel. Needs no water. Cuts grease, oil, tar, creosote, paint, printers' ink, Black Magic oil base drilling fluid. Soothes cuts, scratches and chapped skin. On sale at supply stores. Write for free sample.
Packed in 1 lb. and 5 lb. cans
OIL BASE, Inc.
130 ORIS STREET
COMPTON, CALIFORNIA

— a progressive service organization purchasing and marketing —

NATURAL GASOLINE
REFINED PRODUCTS
BUTANE
PROPANE
LP-GAS EQUIPMENT

BEACON PETROLEUM COMPANY
P.O. Box 2618
Phone 5-5553 TULSA, OKLA.

MARKETS

INDEPENDENT market sources on the Gulf Coast late last week reported that demand for all petroleum products, even including motor fuel which is in its peak consuming season, had dropped in the last 2 weeks. At the same time, however, material seems more difficult to find, they said.

Regular-grade gasoline was bringing about 12½ cents per gallon at its top price on the open spot market. Spot prices for burning oils—No. 2 and kerosine—was around 9½ cents.

Residual Market Sluggish

Heavy duty fuel oil was still sluggish on the interior tank-car market. One Mid-Continent refiner was reported to have placed large quantities of this product on the market. Tank-car price was as low as $2.36, with water shipments at about $3.25.

A tendency toward some easing in the high asking prices for gasoline in the Mid-Continent area was reported last week by suppliers. Movement of motor fuel, due to the easing off of "fancy premiums" asked by some suppliers for spot material, picked up some, it was reported.

One buyer reported purchasing a tank car of third-grade unleaded white gasoline, f.o.b. North Texas, at 11¼ cents per gallon. The price represented a decrease by the supplier of ¼ cent. One observer pointed out that many suppliers have been passing up "these offerings at fancy premiums," and that many of them will make no purchases until sale of the material is assured.

An easing in the asking price for heavy fuels was noted when one supplier offered 10 to 25 cars of No. 5 at $2.40 per barrel, West Texas. Demand for No. 6 residual continued light with a few inquiries for this material for future delivery. Buyers indicated that the market for heavy fuels for the next 2 or maybe 3 months would be one of a buyer's market.

One large Mid-Continent area supplier late last week increased his spot tank-car price quotations, Group 3, ⅛ cent per gallon on kerosine, range oil and No. 2 heating oil, bringing quoted prices on these products to 9⅞, 9½, and 9¼ cents, respectively.

Spot demand for No. 2 continued firm in the Mid-Continent area and was showing no signs of any substantial weakening. Kerosine was said to be "not so strong."

A few buyers were reported drawing on their July quotas for motor fuel during the latter part of June. However, one Mid-Continent refiner said that he was unable to provide any of his customers with advance deliveries of gasoline and that he was just now getting caught up with all commitments for June. Demand, he said, had been heavy for spot-market material, but he was unable to provide any great quantity to buyers.

Buyers Balk at High Prices

The New York Harbor area also experienced some buyer resistance to high asking prices in the open spot market last week. Buyers of No. 2 heating oil were bidding no higher than 11.25 cents while some were bidding no higher than 11 cents, according to some suppliers. The previous generally quoted asking price was 11.5 cents for both No. 2 oil and kerosine. Spot kerosine was said now to be considerably below that level. One large supplier last week reported a reduction of 0.2 cents per gallon in gasoline tank-wagon postings at Baltimore and Hagerstown, Md. Quotations generally on all petroleum products along the Atlantic Seaboard continued unchanged.

Representative Quotations

Representative spot-market quotations of leading suppliers as of July 6, 1948. Figures are f.o.b. plant for tank-car shipment in cents per gallon, except for residual fuel oil which shows the price per barrel and wax, in cents per pound.

GASOLINE, KEROSINE, AND FUEL OILS

	Mid-Continent Group 3	New York Harbor	Texas Gulf Coast
Regular gasoline, 73-75 octane	10½-12½	11.5-12* 10.5-11.9†	10.9-12¾
Premium gasoline, 78-80 octane	11½-13½	10.6-13.4	12.9-13½
42-44 w.w. kerosine	9½-10	10.3-11.9	10¼-10½
No. 2 straw fuel oil	9-9½	9.4-10.9	9.05-10
No. 6 residual	$2.40-2.50	$3.03-3.90	$2.35-2.75

*Branded (74-76 octane); †Unbranded (74-76 octane).

NATURAL GASOLINE

	Group 3	North Texas	N. La.
Grade 26-70	8½	8	8¼
Grade 18-55	10.2	9.6	9.9

LUBRICATING OILS
South Texas

200 vis., No. 2-3 neutral	12-14.5
750 vis. No. 3-4 neutral	15-17.25
2,000 No. 5-6 neutral	17-21

LUBRICATING OILS
Mid-Continent

150-160 vis., D bright stock, 0-10 pp.	30-33
200 vis. No. 3 neutral, 0-10 pp.	30-31

Western Pennsylvania

145-155 vis. 10 p.t. bright stock	47
180 vis. p.t. neutral	45

CRUDE-SCALE WAX
Mid-Continent

130-132 A.S.T.M. melting point	6¾-7

EQUIPMENT MEN ...in the News

Catlow Succeeds Judd In Republic Supply

H. B. CATLOW

A. B. JUDD

J. H. BROOKS

At a recent meeting of company officials of Republic Supply Co., Houston, H. B. Catlow, formerly vice president and manager of sales, was elected president of the company succeeding A. B. Judd who will continue to serve as a member of the board of directors.

Judd has resigned as president of the company to enter business for himself. He will organize his own company with headquarters in Houston.

Don L. Collins, executive vice president, continues in the same capacity. Other officials of Republic are J. H. Brooks, Tulsa, vice president, and John Lollar, Jr., Houston, secretary and treasurer.

Daley Succeeds Robinson in Du Pont

Edmund G. Robinson, general manager of the organic chemicals department, E. I. du Pont de Nemours & Co., since 1929, will retire from active company service on July 1. He will be succeeded by John F. Daley, general manager of the Du Pont pigments department. Robinson will continue as a member of the company's board of directors.

Three Engineers Join Totco

Recent additions to the rapidly expanding field engineering staff of Technical Oil Tool Corp., Ltd., include Phillip Fouché, John Carr, and John Brown. Fouché, with headquarters at Hobbs, N. M., is covering the area which includes Liberal, Kans.; Frankel City, Pampa, and Sundown, Tex. John Carr serves Carthage, Longview, Winnsboro and Kilgore, Tex., working out of Kilgore. Southern Louisiana territory is in charge of John Brown who maintains his headquarters at Lafayette. The field service engineering staff at Technical Oil Tool Corp. now numbers 16, and stocks of Totco recorders and running equipment for controlled vertical drilling are maintained in more than 60 points within the United States.

Faris Transferred To New York

Jack Faris, for the past 11 years identified with the sales department of Continental Supply Co., has recently been transferred to the company's export division in New York.

Faris joined Continental in April 1937 as floorman in the Corpus Christi store. Several months later he was moved to the Benevedes, Tex., store in the same capacity. In June 1938 Faris returned to Corpus Christi as salesman and remained at that point until joining the export office, with the exception of 2 years at Falfurrias as store manager.

Smith Joins Rey Supply

W. H. SMITH

W. H. (Bill) Smith, former pipe and marine-equipment buyer for California Co., has joined Rey Supply Co. of New Orleans and will represent the Almon A. Johnson, Inc., line of deck machinery for the oil industry, Paul Ratliff, Rey Supply Co., partner, announced recently.

Smith was graduated from the University of California in 1933 with a mechanical engineering degree. He was pipe and marine equipment buyer in the New Orleans office of The California Co. for 2 years, and prior to that time was assistant purchasing engineer for the Ingalls Shipbuilding Corp., Pascagoula, Miss. He was associated earlier with the J. A. Jones Construction Co., Brunswick, Ga., as scheduling engineer.

Firm members of the Rey Supply Co. are J. P. Ratliff, E. E. Elkins, and M. C. Young.

Sapulpa Tank Adds Engineer

Sapulpa Tank Co., Sapulpa, Okla., announces the addition of James Russell Wade, formerly of Oklahoma City, to its engineering staff as welding engineer. Wade will be in charge of procedures, techniques, etc.

Wade was formerly associated with Black, Sivalls & Bryson, Inc., Oklahoma City, as assistant chief metallurgist. Born in Wichita, Kans., Wade attended Oklahoma City public schools, Oklahoma City University, and Oklahoma A. & M. College at Stillwater, Okla. He joined B. S. & B. in 1937 and in 1940 was made chief assistant metallurgist. In September 1940 he entered the U. S. Air Corps and served 38 months, 27 of them in the European Theater.

Sapulpa Tank Co. specializes in field fabricating, erecting, and dismantling of storage tanks and refinery equipment.

MacClatchie Appoints T-P Tool Co.

In order to facilitate sales and service throughout the Rocky Mountain area, MacClatchie Manufacturing Co. has appointed T-P Tool Co. with headquarters in Cody, Wyo., to handle the complete line of MacClatchie products, according to an announcement made by J. Warren MacClatchie. The sales organization of T-P Tool Co. will service the entire area and, in addition to its main headquarters, a branch warehouse is maintained in Littleton, Colo.

MacClatchie Manufacturing Co. also has announced the production of precision honed mud pump liners. This will result in producing a liner that will have a true concentric bore from end to end.

Fluor Opens New Sales Office

Harold S. Armstrong, district manager, is now heading Fluor's new district sales office, located in the Underwood Building, San Francisco. The territory covered by this office

includes from San Francisco north through California, Oregon, and Washington.

Meininger in Charge of Aluminum Development

Carl W. Meininger has been appointed to the sales staff of Stacey Brothers Gas Construction Co. Meininger will be in charge of aluminum development and sales with headquarters in the company's main plant in Cincinnati.

Immediately following graduation from Case Institute of Technology in 1930, Meininger joined Aluminum Co. of America where he served as plant metallurgist, moving up through the ranks to sales engineer in charge of heating, air conditioning, and refrigeration.

Hydraulic Pumping Jack Department Announced

Formation of a hydraulic pumping jack department devoted exclusively to the design, manufacture, sales, and service of the Pelton long-stroke hydraulic pumping jack was announced by W. F. Boyle, vice president and general manager of Pelton Water Wheel Co. In the new departmental setup, C. J. Woodard has been named manager sales-service, L. D. Alward, chief engineer, and J. W. Young, shop superintendent.

Pelton started the development of the long-stroke hydraulic pumping jack in 1939 for rod pumping of oil wells—particularly in the deeper zones—and has 50 units built or building for the California oil fields to date, 44 of them installed since the end of the war. In addition Pelton has recently expanded its activities to the Mid-Continent oil fields by installing a long-stroke hydraulic pumping jack in Oklahoma.

Foy Appointed Vice President by Koppers

Fred C. Foy, vice president of J. Walter Thompson Co., has accepted an appointment as vice president and manager of the sales department, central staff, of Koppers Co., Inc., it was announced by Gen. Brehon Somervell, Koppers' president.

As general manager of the Detroit office of the Thompson organization, Foy also has been supervisor of all phases of the Ford Motor Co. advertising, which is handled by that agency. He will assume his new duties at Pittsburgh headquarters of Koppers on August 1.

Hagn Elected Houston N.A.C.A. President

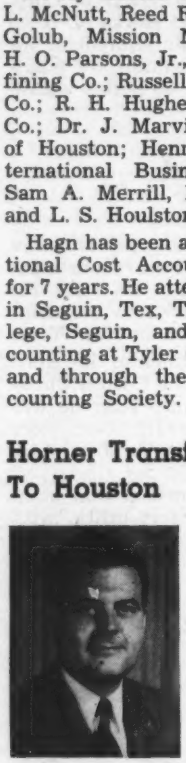
H. J. Hagn, vice president and general manager of Well Equipment Manufacturing Corp., Houston, has been elected president of the Houston chapter of the National Association of Cost Accountants.

Other newly elected officers are John H. Burns, Barrow-Wade-Guthrie & Co., vice president; H. T. Hamm, Houston Oilfield Material Co., vice president; C. Edwards Morton, Sheffield Steel Co., treasurer; and E. M. Carlisle, Humble Oil & Refining Co., secretary.

Newly elected directors are: Floyd L. McNutt, Reed Roller Bit Co.; Anan Golub, Mission Manufacturing Co.; H. O. Parsons, Jr., Humble Oil & Refining Co.; Russell N. Knott, Shell Oil Co.; R. H. Hughes, John W. Mecom Co.; Dr. J. Marvin Sipe, University of Houston; Henry C. Wendler, International Business Machine Co.; Sam A. Merrill, Merrill & Kendall; and L. S. Houlston, Schuhmacher Co.

Hagn has been a member of the National Cost Accountants Association for 7 years. He attended public schools in Seguin, Tex, Texas Lutheran College, Seguin, and did advanced accounting at Tyler Commercial College and through the International Accounting Society.

Horner Transfers To Houston



Byron Jackson Co., oil tool division, announces the transfer from Los Angeles to Houston of V. C. Horner. Horner will be assistant chief engineer of the oil tool division in the Gulf Coast and Mid-Continent areas. His new duties will take him into the oil fields of that area where he will observe and report on the operation of BJ's line of oil-field tools. He will also act as liaison between the engineering department in Los Angeles and the Houston shop where many of the BJ tools are made and repaired.

Weston Appointments In the Southwest

Weston Electrical Instrument Corp., Newark, has announced the appointment of three new representatives to cover Texas and Oklahoma. This area was formerly served by the T. C. Ruhling Co. of Dallas. Ruhling has retired from business after having served the Weston corporation more than 19 years.

The new representatives and their territories are: Butler and Land, 3405 Milton Avenue, Dallas, North Texas; The Lynn Elliott Co., 322 M. & M. Building, Houston, South Texas; Riddle and Hubbell, 302 South Cheyenne Avenue, Tulsa, all of Oklahoma.

Heiple Promoted to Chief Field Engineer

D. K. HEIPLE

Danforth K. Heiple has been promoted to chief field engineer for R. G. LeTourneau, Inc., according to an announcement by Roy E. McCluskey, vice president and general sales manager for the company. Heiple, in his new duties, will give sales assistance to LeTourneau distributors in planning equipment applications and compilation of earthmoving production and cost.

Heiple was graduated from Purdue University in 1941 with a B.S. degree in Mechanical and Civil Engineering. During World War II, he joined the Naval Aviation Engineers, where, for a time, he served as officer in charge of service and maintenance of aircraft aboard the U.S.S. Enterprise. Discharged in 1945, he came to LeTourneau as field engineer. He succeeds R. C. Lewis, resigned.

Fister Named By Oil Well Supply

O. J. Fister has been appointed assistant to vice president of Oil Well Supply Co. with headquarters at Oil City, Pa.

Fister has been with U. S. Steel since 1935, starting with Federal Shipbuilding & Dry Dock Co. at Kearny, N. J. He has been assistant manager of industrial relations at Federal since 1943.

Hammel-Dahl Appoints West Coast Representative

Hammel-Dahl Co., Providence, manufacturers of automatic control equipment, announces the appointment of Republic Supply Co. of Los Angeles as West Coast representative.

Republic Supply Co. of California is an independently owned and operated company with main offices in Los Angeles and Emeryville and with 16 branch stores throughout the state.

The acquisition of the Hammel-Dahl line of control valves and equipment rounds out the completeness of the type of material required in the refinery, chemical, and allied industries in which Republic has always specialized.

Miers Heads Steam Turbine Sales

R. N. Miers has been named manager of the sales section of the Allis-Chalmers steam turbine department, according to an announcement by William A. Yost, Jr., department manager. He succeeds W. F. Daly, who has been appointed manager of the company's Cincinnati office.

Appointment of heads of three groups within the sales section of the steam turbine department have also been announced as follows: C. W. Bloedorn, turbines and turbine-generator units 10,000 kw. and larger; W. R. Murley, turbines and turbine-generator units below 10,000 kw., and Arthur Mergy, over-all studies and projects of a special nature not within the scope of the other two groups.

Hewitt-Robins Establishes New Offices

Hewitt - Robins, Inc., has established new, enlarged, modern offices at 370 Lexington Avenue, New York. The executive and sales staff of Hewitt Rubber Division, Hewitt Restfoam Division, and Robins Conveyors Division will be housed in these offices.

New General Manager For Amercoat

A. E. TURNER

To direct their rapidly expanding AMERCOAT Division (protective coatings), the American Pipe & Construction Co. of Los Angeles has appointed Alan E. Turner vice president and general manager. Turner resigned June 1 as vice president of Barrington Associates, Inc., New York management consultants. He brings to AMERCOAT a thorough knowledge of the coating industry and its merchandising problems. For more than 6 years previous to his association with Barrington, he was executive vice president of H. B. Davis Co., Baltimore paint manufacturer, and of its subsidiary company, John W. Masury & Son, Inc.

Wassell Tulsa Co. To New Quarters

Wassell Tulsa Co., Oklahoma distributor for Wassell Organization, Inc., Westport, Conn., has moved to new quarters at 2714 E. 15th Street, Tulsa. Offices and display rooms will be housed in a new building at this address.

Gerrit A. Visser is president of the Tulsa concern. Guss Zeldich is methods engineer. The company plans to set up Produc-trol boards demonstrating oil-field applications. Executives of oil companies are invited to observe the boards, which will be set up to illustrate applications in various divisions of the industry.

Roberts Transferred To Caracas

R. F. ROBERTS

R. F. Roberts, who for a number of years was division manager of Reed Roller Bit Co. at Shreveport, has been transferred to Caracas, Venezuela.

Roberts' new territory includes Venezuela, Colombia, Ecuador, Peru, and Trinidad. He replaces T. C. Lemcke, who is returning to the States.

Goodrich Opens New Research Center

B. F. Goodrich Co. has recently completed a new research center on a tract of 261 acres halfway between Akron and Cleveland, Ohio. The center utilizes the most precise and delicate instruments now known to science and is one of the most complete industrial laboratories conducting fundamental and applied research now in existence. Completion of the center, started 3 years ago, marks more than a half century of organized research for the company, B. F. Goodrich having established the rubber industry's first laboratories in 1895 under the direction of the late Charles C. Goodrich, chemist son of the company's founder.

The site, nearly 20 miles from the company's manufacturing plants at its principal headquarters in Akron, was selected to insure that noise, dirt, and vibration do not interfere with the work of the scientific staff, nor with the delicate instruments employed.

There are now six buildings and a powerhouse in the research center. Two three-story structures, the main research laboratories, and the connected engineering unit, are windowless except for small openings at the ends of the hallways, and air conditioned. Other units, isolated from main buildings, include one for extremely high pressure research, where 12-in. reinforced concrete barriers protect workers against hazard. Another is for experiments with gases. The third is for storage of volatile solvents, and a fourth for cooling the water for air conditioning.

Dr. Howard E. Fritz, B. F. Goodrich vice president, research, heads the new research center.

Byron Jackson Shuffles Advertising Personnel

W. E. Largey has been placed in charge of all advertising for the Oil Tool Division of Byron Jackson Co., Los Angeles. He replaces C. W. Smick who will devote his full time to the advertising program of the Pump Division of Byron Jackson Co.

Largey has been associated with the Patterson Ballagh Division of Byron Jackson Co. for the past year, and will continue to maintain his offices at 1900 East 65th Street, Los Angeles.

The agencies for the respective divisions of Byron Jackson Co. will not be changed.

McComb Organizes McRan Co.

J. F. McCOMB

General headquarters of the newly organized McRan Co. is located at 816 Gray Avenue, Houston. The firm handles Stran-Steel framing and Quonset buildings for farm, industrial, and commercial use in South Texas. John F. McComb is president of the company. McComb served 4 years as director of sales for the Stran-Steel division of the Great Lakes Steel Corp. Prior to his connection with Stran-Steel, McComb was with Continental Steel Corp. of Kokomo, Ind., for 16 years as sales manager of the sheet-steel division. He is a University of Kansas graduate. Associated with McComb are Henry E. Randle, vice president; Adolph Stuermer, secretary, and W. F. Weed, treasurer.

Gorman-Rupp Elects New Vice Presidents

Election of three new vice presidents is announced by J. C. Gorman, president of the Gorman-Rupp Co., Mansfield, Ohio, manufacturers of centrifugal pumps.

The new officers are Warren E. Rupp, formerly chief engineer; Walter O. Buehler, who recently resigned as vice president of the Carver Pump Co., and Kenneth H. Cadigan, former sales engineer of the company.

These appointments are a part of the plans for enlarging the operations of the company to include a complete line of centrifugal pumps for industrial and municipal applications. The design and development of the new products will be under the direction of Buehler, who has been nationally prominent in the pump business for over 20 years.

(Continued on page 145)

Classified Advertising

The Market Place for the Oil Industry

UNDISPLAYED

All ads, 12 cents a word. Minimum charge, $3.00 per insertion.
Centered Line, any ad, $1.00.
Box Numbers count 9 words when replies are to be sent to our Tulsa Office. Replies forwarded without charge.

DISPLAYED, PER INCH

$12.00 per column inch per insertion. One-point border and 12-point capitals are allowed. Larger type sizes not accepted.

All classified advertising payable in advance.
10% Discount if 3 insertions are ordered at one time.
COPY DEADLINE, 9:00 a.m. Monday prior to each week's issue.

THE OIL AND GAS JOURNAL
P. O. Box 1260, TULSA, OKLAHOMA

EQUIPMENT FOR SALE

FOR CABLE TOOLS
DEGEN PIPE AND SUPPLY CO.
Box 107, Red Fork Station, Tulsa, Oklahoma

FOR SALE: Wilson Master Model Winch powered by 6 MZR Waukesha engine. Unit mounted on one and one-half ton Chevrolet truck equipped with fifty foot single pole telescoping mast. Terms. Melton Supply Company, Seminole, Oklahoma.

PUMPS

Centrifugal and Reciprocating Chrysler Industrial Engines. Write for list and prices.

H. A. McCARTHY
310 Thompson Bldg., Tulsa, Oklahoma
Phone 5-3296

FOR SALE
STAINLESS STEEL
NAPTHENIC ACID PLANT

One—36" I.D. x 32' x ¼" Shell Stainless steel Fractionator with 7'-7" skirt—with 10 trays.

Four—5" x 3" x 6" Union Simplex Steam Pumps with solid stainless fluid ends.

One—Heater and Reboiler with 1" I.D. tubes and bolted return headers—stainless.

One—Condenser with ¾ I.D. tubes and bolted return headers—stainless.

Charge and product piping — stainless steel.

Analysis of stainless steel:
18% Chrome
8% Nickel
3% Molybdenum
½ to 1% Columbium

PLANT IN EXCELLENT CONDITION. WE INVITE YOUR INSPECTION.

PROCESS CONSTRUCTION CO., Inc.
20700 South Figueroa Street
Torrance, California
Los Angeles Phone:
PLeasant 2-6366
PLeasant 1-6560

EQUIPMENT FOR SALE

BUCYRUS-ERIE 36-L Cable Tool Rig, complete with 5", 7" and some larger tools. Doghouse, Light Plant, Butane Tank, all hand tools. Pick-up Truck. Rig now working continuously on completion work, less than one year old, perfect shape. Sell complete outfit only. Write G. H. Howse, Box 113, Abilene, Texas.

FOR SALE: New Welded Steel Tanks, New Bolted Steel Tanks—100 bbl., 250 bbl., 500 bbl., 1000 bbl., 2—10,000 bbl. Used Bolted Tanks—65 bbl., 100 bbl., 250 bbl. up to 5,000 bbl. Gasoline tanks, 3-10' x 50' 4-10' x 35', 6-7' x 30'. Also Tool Houses, new or used. Write: Independent Tank Company, Seminole, Oklahoma. Phone 977.

DIESEL electric plant; Winton, heavy duty, complete with all accessories, 325 HP., 360 R.P.M., direct connected to Westinghouse generator, 282 K.V.A., 240 Volts, 3 phase, 60 cycle, with direct connected exciter, panel board with automatic voltage regulator, pumps, heat exchanger, muffler, etc., A-1 condition. For further information write Sam Warren & Son Stone Company, 822 S. 24th St., Louisville, 10, Ky.

FOR SALE

12—230 H.P. Type 10 Bessemer New 17" Power Cylinders complete ready to run with 16" to 18" Compressors. 1—230 H.P Clark Horizontal with Compressors. Located Salem, Illinois.

ENGLE PETROLEUM, Incorporated
Box 655, Evansville, Indiana

WE BUY and SELL

Steel Pipe and Tubing
Pipe Fittings—Well Casing
Culverts and Valves

SONKEN-GALAMBA CORP.
2nd & Riverview, Kansas City 18, Kans.

FOR SALE

3—80' Angle iron steel drilling derricks with foundation timbers.

1—220 H.P. Waukesha drilling unit.

1—145 H.P. Waukesha drilling unit.

1—170 H.P. Young drilling motor.

1—2 Cyl. Cooper-Bessemer 10½ x 11 Gas Engine.

1—13 x 15 Franklin OF Oil Engine.

Above all in good used condition.

Priced Reasonable
Write or phone

M. N. BUTLER
128½ E. Liberty St.
Wooster, Ohio

EQUIPMENT FOR SALE

DRILLING equipment, reconditioned ready for delivery, Failing, Franks, Ell Tulsa, Longyear, American, Sullivan, Fort Worth, Wichita, Keystone, National, Standards. Also steel derricks, cable tools, cable and good used casing, most sizes. Pressey & Son, Pueblo, Colo.

ONE 5½ Keystone Rig on Steel, complete with tools from 10" down. A-1 condition. Five Thousand Dollars. Rig in service at present at Chanute, Kansas. Neosho Drilling Co., Box 265, Chanute.

DIAMOND core drill. New 22-HD Sullivan core drill, fully equipped, inventory of $11,000, drilled 1500'. Will sell or trade for Bucyrus-Erie 24-L or 22-W. Box C-426, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE
DIESELS and PUMPS

Six new 1947 unused 475 BHP 5 cylinder Baldwin Model VG Diesel Engines, four connected to Ingersol-Rand Multi-stage Centrifugal Pumps with Farrel-Birmingham Step-up Gears and two connected to Worthington Horizontal Triplex Double Acting Pumps, all units complete with Falk Couplings, Lummus Coolers, other accessories. Location Ohio, immediate delivery. Direct inquiries to

THE BUCKEYE PIPE LINE COMPANY
Joseph Steele, Purchasing Agent,
Room 2200, 30 Broad Street,
New York 4, N. Y.

PARTS FOR ARMY TRUCKS

New and Used

Largest stock in America, 6x6, 6x4, 4x4, 4x2. All items guaranteed. Largest auto wrecking house in the west with most complete stock of new and reconditioned parts for all cars and trucks. New jeep power units complete with radiators and stub shafts. Fast service.

PIONEER AUTO WRECKING CO.
732 W. 13th Ave. Denver 17, Colo.

Brand New!
WILSON-SNYDER
HOT OIL PUMP

Price $2500.00 F.O.B. Kansas City

- Capacity: 55 Gallons Per Minute.
- Speed: 70 R.P.M.
- Head Pressure: 1600 lbs.
- Piston Size: 2¾".
- Stroke: 8".
- Stub Shaft: 2⅞" Diameter, arranged for gear drive.
- Serial Number: 12862.

Write, Phone or Wire:

BROWN-STRAUSS Corporation
P.O. Box 78, Kansas City, Missouri
Phone: Ha. 1000

LEASE AND DRILLING BLOCKS

1300 ACRES, Oklahoma hot spot, excellent geology, shallow drilling, well down 400 ft., $5,000 handles. L. H. Vinnedge, Country Campus, Huntsville, Texas.

ILLINOIS UPLIFT: Five test wells drilled testing Niagria lime, prove high varying 120', having four showing oil, in the hole. Want a test for Trenton at 2,200'. Have 2,000 acres real geology. Sam J. Burkitt, Moweaqua, Illinois.

LEASES: Proven, semi-proven, and wildcat in Campbell, Crook, Laramie, Goshen, Albany, and Platee Counties, Wyoming. Large drilling blocks or 40-acre tracts, priced to sell. These areas are scheduled for considerable exploratory development by major companies. Box 382, Cheyenne, Wyoming.

PATENT ATTORNEYS

PATENT Practice before U. S. Patent Office. Validity and Infringement Investigations and Opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 418, 815-15th Street, N.W., Washington 5, D. C.

ROYALTIES

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma

DEEDED ROYALTIES
San Juan Basin & Permian Basin. Write Harry S. Wright, Wright Bldg., Farmington, New Mexico.

WE will buy producing or non-producing oil royalties. Send particulars. Standard Security Company, 115 Broadway, New York 6.

LEGAL BLANKS

BURKHART LEGAL BLANKS since 1908 Oil-Gas (all states), Business, Real Estate, Legal Forms, Leases, Revised With Government Regulations, Commercial Printing, Catalog and Samples on Request. Burkhart Printing & Stationery Company, 115 South Cincinnati, Tulsa 3, Oklahoma.

FOR SALE

ALUMINUM PAINT—200—5 gallon cans. Exterior Spar Varnish vehicle. Highly polished, Aluminum Paste pigment in separate container. Distributors Liquidation. Regular price $24.75—take any part, $10 per 5 gallon can. Send check with order. The National, 606 Walnut, Kansas City, Missouri.

Equipment Men

(Continued from page 141)

Hosford Named Koppers West Coast Manager

Charles F. Hosford, Jr., former president of Pennsylvania Coal Products Co., Petrolia, Pa., has been named West Coast manager for the chemical division of Koppers Co., Inc. Hosford will have headquarters in San Francisco. Customers in seven states—California, Oregon, Washington, Arizona, Idaho, Nevada, and Utah—will be serviced from the new district offices.

Personnel Changes in Ideco

Richard R. Bloss, vice president and general manager of International Derrick & Equipment Co., Texas division at Beaumont, announces three promotions from within the ranks of the division.

William O. "Bill" Cook has been promoted to assistant general manager of the Texas division. He has been chief engineer since 1938.

A. R. McLerran has been promoted from the position of assistant chief engineer to that of chief engineer of the Texas division.

M. E. "Trader" Horn has been servicing drilling equipment for the past 20 years and has been field service engineer for Ideco since September 1944. Horn has been moved to Beaumont, where he will be in charge of field service for the Beaumont plant of Ideco, under the supervision of the central service department in Dallas.

Grannis Named Manager Of Equipment Sales

Uri B. Grannis, Jr., has been appointed manager of equipment sales for the American Brakeblok Division of American Brake Shoe Co.

Grannis has been with Brake Shoe since 1935 and has served in various sales capacities with the company. A native of Chicago, he is a graduate of Princeton University. He will be located at the division's headquarters in Detroit.

Ward Named Kellogg Vice President

Gilfry Ward has been appointed vice president of Kellogg Division of American Brake Shoe Co., according to an announcement by William T. Kelly, Jr., division president.

Ward has been with Brake Shoe since graduating from college in 1928. In addition to his new duties, he will continue to serve as vice president of the company's American Manganese Steel Division, a position which he has held since 1938. He will continue to be located in Oakland, Calif.

Cutler-Hammer Moves To New Houston Office

New quarters for its Houston sales office are announced by Cutler-Hammer, Inc., Milwaukee, Wis., pioneer electrical manufacturer. Located at 2415 San Jacinto Street, Houston, the new quarters provide expanded facilities for the company's sales activities in that area. P. G. Greene will manage the office as a branch of the company's Dallas district sales office.

France Packing Appoints Sales Representatives

France Packing Co., Philadelphia, announces the appointment of Thilenius Equipment Co., Tulsa, and George A. Krutilek, El Paso, as sales representatives in the Southwest.

France Packing Co. manufactures metal packing, valve plates, and piston rings, with special application in refineries, chemical plants, pipe line stations, and cycling plants.

These local sales representatives will carry a stock of popular-size packing rings in cast iron, bronze, and carbon-bakelite; also compressor plate valves and segmental piston rings.

More than 60 Lane-Wells sales engineers and operating superintendents met for a 3-day sales convention at the Blackstone Hotel in Fort Worth recently. Under the direction of James D. Hughes, sales manager, reports of company activities from all divisions were made. Morton T. Higgs, manager of field operations, gave a complete report on new field equipment. Val L. Forsyth, assistant chief engineer, outlined improvements and developments on equipment and products

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CALENDAR OF EVENTS

August

Appalachian Gas Measurement Short Course, eighth annual session, West Virginia University School of Mines, Morgantown, W. Va., August 30-September 1.

Interstate Oil Compact Commission, summer meeting, New York, August 30-September 1.

September

American Chemical Society, Division of Petroleum Chemistry, fall meeting, St. Louis, September 6-10.

The Instrument Society of America, third instrument conference and exhibit, Philadelphia Convention Hall, Philadelphia, September 13-17.

Pacific Coast Gas Association, annual convention, Hotel Casa del Rey, Santa Cruz, Calif., September 14-16.

American Petroleum Institute, Lubrication Committee, Hotel Traymore, Atlantic City, N. J., September 15-17.

National Petroleum Association, Hotel Traymore, Atlantic City, N. J., September 15-17.

Oklahoma Utilities Association, Gas Division, annual conference, Biltmore Hotel, Oklahoma City, September 17.

National Butane-Propane Association annual convention and trade exhibit, Congress Hotel, Chicago, Ill., September 20-22.

Independent Petroleum Association of America, annual meeting, Plaza Hotel, San Antonio, Tex., September 27-28.

October

American Society of Mechanical Engineers, petroleum division, Herring Hotel, Amarillo, Tex., October 3-6.

American Institute of Mining & Metallurgical Engineers, petroleum division, fall meeting, Adolphus Hotel, Dallas, October 4-6.

American Association of Petroleum Geologists, midyear meeting, technical session and 3-day field trip, William Penn Hotel, Pittsburgh, Pa., October 4-9.

American Gas Association, thirtieth annual convention, technical section, and exhibition of the Gas Appliance Manufacturers Association, Ambassador Hotel, Atlantic City, N. J., October 4-8.

California Natural Gasoline Association, twenty-fourth annual fall meeting, Ambassador Hotel, Los Angeles, Calif., October 8.

National Lubricating Grease Institute, sixteenth annual convention, Edgewater Beach Hotel, Chicago, October 11-13.

American Association of Oilwell Drilling Contractors, eighth annual meeting, Rice Hotel, Houston, October 11-13.

Texas Mid-Continent Oil and Gas Association, twenty-ninth annual meeting, Fort Worth, October 14-15.

American Institute of Mining and Metallurgical Engineers, petroleum division, Elks Club, Los Angeles, Calif., October 14-15.

Independent Natural Gas Association of America, annual meeting, Mayo Hotel, Tulsa, October 26.

November

American Society of Mechanical Engineers, fuels division, Greenbrier Hotel, White Sulphur Springs, W. Va., November 3-4.

Society of Automotive Engineers, fuels and lubricants division, Mayo Hotel, Tulsa, November 4-5.

American Petroleum Institute, annual meeting, Stevens Hotel, Chicago, November 8-11.

January 1949

Society of Automotive Engineers, annual meeting, Book-Cadillac Hotel, Detroit, Mich., January 10-14.

March 1949

New England Gas Association, Hotel Statler, Boston, March 24-25.

American Chemical Society, division of petroleum chemistry, spring meeting, San Francisco, March 27-April 1.

April 1949

National Petroleum Association, Hotel Cleveland, Cleveland, Ohio, April 13-15.

NOMADS

Houston Nomads, second Monday of each month, The Houston Club, Houston.

Los Angeles Nomads, second Wednesday each month, Jonathan Club.

New York Nomads: Golf party, Sept. 21, at Baltusrol Country Club, N. J.

LEGAL

CALL FOR BIDS. To sell royalty oil accruing to the United States. Sealed bids, in duplicate, will be received in the office of the Director of the Geological Survey, Room 5224 Federal Works Agency Building, Washington 25, D. C., on or before noon, d.s.t., July 13, 1948, and publicly opened at 2:00 p.m., d.s.t., on that day, for the sale of certain royalty crude oil accruing to the United States from Federal lands in the Elk Basin field, Montana and Wyoming, and the Cat Creek field, Montana. No bid received after the time fixed herein for submitting bids will be considered. Contracts for the royalty oil will be effective the first day of the calendar month following execution by the Secretary of the Interior and will be for a term ending January 1, 1950, for the Elk Basin royalty oil and a term of 3 years for the Cat Creek royalty oil. The current monthly royalty oil accruals offered for sale under the two items are approximately as follows: 3300 barrels from the Madison formation of the Elk Basin field, and 2,400 barrels from the Cat Creek field. Specifications on the quantities of crude oil offered for sale, the form of bids, the form of contract, and the conditions with respect to bond requirements, deliveries, volume measurements, gravity determinations, and other details relating to the call for bids may be obtained from the Director, Geological Survey, U. S. Department of the Interior, Washington 25, D. C., or the Oil and Gas Supervisor, U. S. Geological Survey, P. O. Box 400 (305 Federal Building), Casper, Wyoming. Sealed bids must be submitted to the Director of the Geological Survey, U. S. Department of the Interior, Washington 25, D. C., pursuant to the specifications, the envelope to be marked plainly "Bid on Royalty Oil, not to be opened before 2:00 p.m., d.s.t., July 13, 1948." Maston G. White, Acting Assistant Secretary of the Interior.

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